EPIDURAL ANALGESIA IN LABOUR AND ITS OUTCOME

Dissertation submitted to
THE TAMILNADU DR.M.G.R.MEDICALUNIVERSITY
In partial fulfillment of the degree of
M.D. OBSTETRICS AND GYNAECOLOGY

PSG INSTITUTE OF MEDICAL SCIENCES AND RESEARCH
DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY

APRIL 2013

CERTIFICATE

This is to certify that **DR.NOSHIN ASHRAF** has prepared this dissertation entitled "**EPIDURAL ANALGESIA IN LABOUR AND IT'S OUTCOME** under my overall supervision and guidance in the Institute of PSG Institute of Medical Science and Research, Coimbatore in partial fulfillment of the regulations of Tamil Nadu **DR.M.G.R. Medical University** for the award of **M.D. Degree in Obstetrics and Gynecology.**

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DECLARATION

I hereby declare that this dissertation entitled “EPIDURAL ANALGESIA IN LABOUR AND IT’S OUTCOME” was prepared by me under the direct guidance and supervision of **Prof. DR.REENA ABRAHAM MD ,DGO,** PSG Hospital,Coimbatore.

The dissertation is submitted to the Dr.M.G.R. Medical University in partial fulfillment of the University regulations for the award of MD degree in Obstetrics and Gynecology. This dissertation has not been submitted for the award of any Degree or diploma.

Dr. Noshin Ashraf

ACKNOWLEDGEMENT

I wish to express my sincere thanks and gratitude to my professor **Dr.REENA ABRAHAM MD DGO**, Department of Obstetrics &Gynecology, PSG Institute of Medical Sciences & Research for her guidance and encouragement all along in completing my study. She showed me different ways to analyze the study and it helped me a lot to accomplish my goal.

I am extremely thankful to **Prof.Dr.SeethaPanicker MD,DGO,DNB, Prof. Dr. T .V Chitra MD,DGO**; Department of Obstetrics & Gynecology ,PSG Institute of Medical Science & Research for their cooperation extended for my study . I wish to record my heart filled gratefulness and feeling of indebtedness for their great support .

I'm so greatful to the Principal **Dr.S. Ramalingam** and Medical Director **Dr. Vimal kumar Govindan** , PSG Hospitals for permitting me to carry out this study.

I am indebted to all teaching staffs ,colleagues, interns for their valuable suggestions, cooperation and auxiliary attitude. I am extremely thankful to all the patients who played the most important part of my study.

I am obliged to my sisters and friends for their moral support during the study .They were very attentive and helped me organizing all the facts during the preparation of this project to make it unique.

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Proposal Number	:	**11/138**
Project Title	:	**Epidural analgesia in labour and its outcome**
Investigator(s)	:	**Dr Noshin Ashraf**
Institution	:	**PSGIMS & R**
Name of the Guide(s)	:	**Dr Reena Abraham**
Institution	:	**PSGIMS & R**
Waiver of Consent	:	**No**
Review Type	:	**Exempt**
Date of the Meeting	:	**N/A**
Decision	:	**Approved**
Approval Date	:	**07.07.2011**
Validity of the Approval	:	**One year**

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Review Type	:	**Exempt**
Date of the Meeting	:	**N/A**
Decision	:	**Approval renewed**
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Total words	11954

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INTRODUCTION Until this last century ,labour pain had been exemplified as a traumatic and miserable event in a women's life. Various methods have been tried since time immemorial to alleviate this pain. However, this endeavour did not receive much support till the late 19th century,because of various medical and religious reasons. Labour is a complex mixture of biologic mechanisms with mixed emotions and pain .People believed that this labour pain had lot of biological significance and an attempt to abolish it would be potentially dangerous to both mother and fetus and would alter uterine contractions and prolong the delivery. There was a break through for this in 1853 ",when Sir John Snow...

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INTRODUCTION

Until this last century ,labour pain had been exemplified as a traumatic and miserable event in a women's life. Various methods have been tried since time immemorial to alleviate this pain. However, this endeavour did not receive much support till the late 19th century, because of various medical and religious reasons. Labour is a complex mixture of biological mechanisms with mixed emotions and pain .People believed that this labour pain had lot of biological significance and an attempt to abolish it would be potentially dangerous to both mother and fetus and would alter uterine contractions and prolong the delivery. Later there was a breakthrough for this in 1853 ",when Sir John Snow anaesthetized queen Victoria with chloroform for the delivery of her 8th baby prince Leopold , She later said "Dr Snow administered the blessed chloroform and its effect was calming and relaxing beyond measure".(1)

"Childbirth has been recognized as among the most painful experiences known",(melzak and his colleagues) have reported that after spending 15 years studying the physiology of pain, and of applying the Mc Gill Questionnaire as a comparative measure of the intensity of naturally occurring and artificially provoked pain-and the effectiveness of the technique of analgesia-they undertook a study on labour pain .They concluded that the pain of labour was the most severe they had assessed, thus making obstetrical analgesia highly in

demand today. Numerous strategies either non-pharmacologic e.g., Hypnosis, Transcutaneous nerve stimulation, Acupuncture, Abdominal decompression, Yoga, parenteral drugs, Inhalational analgesics, Obstetric blocks or epidural blockade are considered to tackle this pain(3).

Studies suggest that providing pain relief has positive impact on both mother and fetus and the outcome of labour.(4)

Out of all the analgesic methods tried ACOG suggests that "Epidural block is the most effective and least depressant (pharmacologic option) allowing for an alert mother".(5)

Epidural analgesia is highly popular in west. In India, it's still not much popularized due to unfamiliarity, and inexpert personals.

The mother should know well before term, how she will be accommodated during labour and what will be done to achieve a safe and pleasant delivery. The mother must be encouraged to express her preference regarding posture, analgesia and mobility. Fear of the un known is more dreadful than fear of the known, and fear or anxiety in labour is equally as detrimental to both mother and fetus as is pain in labour.(6)

The optimal analgesic is the one that can provide pan relief throughout the entire labour process with no side effects on both mother and fetus, should

provide immediate onset of pain relief, effective pain relief, with minimal motor block, intact airway reflexes, mother should be awake and responsive, with very minimal maternal and neonatal depression and should have no depressant effects on the progress of the labour and the urge to bear down. It should also provide some analgesia in the post partum period, and rapid recovery. (7)

The common disadvantages of each technique of analgesia should also be explained to the patient: the light headness associated with inhalational analgesia; the clouding of consciousness and possibly increased likelihood of vomiting associated with pethidine; leg weakness, loss of bearing down reflex and increased incidence of instrumental delivery associated with epidural analgesia. The mothers must be told categorically that no method offers the certainty of complete freedom of pain.

Since India has poor resource setting ,if facilities for epidural blockade is not available or feasible or if epidural blockade is contraindicated ,we should consider providing parenteral opiods ,which is still a very good option, hence in our study we are analyzing the effects of epidural analgesia in labour and its maternal and fetal outcome in comparision with that of systemic opiod pethidine.

AIM OF THE STUDY

To study the effects of epidural analgesia on labour,maternal and neonatal outcome.

To compare the efficacy and side effects of epidural analgesia with that of intramuscular pethidine.

OBJECTIVES OF THE STUDY

1)To compare the efficacy of both intramuscular pethidine and epidural analgesia.

2) To compare the duration of labour in both the groups after the administration of the drug.

3) To compare the normal vaginal delivery rate to instrumental and caesarean delivery rate in both the groups.

4)To compare the maternal haemodynamic status ,maternal satisfaction and pain score.

5)To compare the intrapartum and postpartum complications if any

6) To analyze the maternal and fetal side effects in both the groups

REVIEW OF LITERATURE

HISTORY OF OBSTETRIC ANALGESICS

Attempts to relieve labour pains started in 18th century, ancient Greeks Chinese and Asians tried several herbs,alcohol,hypnotism .(8)

INHALATIONAL TECHNIQUES

Civilization made a giant leap on January 19, 1847, when James Young Simpson used diethyl ether to anesthetize a woman with a deformed pelvis for delivery, barely months after the demonstration of the anaethetic effect of ether by Mortan in 1846. (9) In his search for a better agent,Simpson also pioneered the use of chloroform for obstetric pain relief.(10)

By 1849, the American Medical Association had recommended the use of analgesia in obstetrics and reported that "in all difficult and instrumental labours, their application could not be rightfully withheld".

There was a strong public opinion controverting the evasion of labour pains, which many believed was a divine affliction ,however the turning point in the controversy came when John Snow administered chloroform to Queen Victoria for the delivery of her child 8th child prince Leopold in 1853. She later said "Dr Snow administered the blessed chloroform and its effect was calming and relaxing beyond measure"(1).

TRICHLOROETHYLENE AND AIR

Trichloroethylene can be used with the help of automatic emotril inhaler. Use of trichloroethylene and air analgesia may not cause maternal hypoxia, but in the presence of fetal distress, oxygen enriched mixture should be given. Its other side effects are nausea and vomiting, sometimes it's sweet smell may be unpleasant and prolonged use can lead to post partum hemorrhage. Its effects are cumulative and inhalation should be stopped whenever drowsiness appears.(11)

METHOXYFLURANE

Analgesia produced by methoxyflurane ceases once inhalation is stopped. Their common side effects are nausea and vomiting.

NITROUS OXIDE

Kilkowitch in 1881 first used nitrous oxide as a labour pain analgesic .It became popular with the introduction of the Minnitl apparatus (1934) which delivered a mixture of nitrous oxide in air. In the early 1960's the currently available 50:50 prepared mixture of nitrous oxide and oxygen (entonox) was described. Entonox can be used by the patient itself as per the need by intermittent inhalation, if used in the correct manner it can provide acceptable levels of pain relief.

Entonox has only 10 % of oxygen that can lead to some uneasiness. Delaying the start of administration until the pain is felt is a guarantee that analgesia will not be obtained, and is the major reason for the discontent.

In 1983 Central Mid Wives board withdrew approval for the use of trichloroethylene and methoxyflurane by unsupervised midwives thus nitrous oxide was only available after that.(8)

Other agents that are currently in use are sevoflurane (Sevox), isoflurane and enflurane.

Psychological methods

Various psychological methods have also been attempted to alleviate the pain of labour.

In the late 18th century, Mesmer promoted a form of hypnosis for reducing labour pain. But this was extremely effective in eliminating the pain of labour but in a small minority of patients .The claimed incidence of success ranges from 23-59 % among selected subjects (moya and james 1960(12). Other major draw backs associated with this technique are the requirement to spend a considerable time with each patient during the antenatal period and the heavy demands made by the hypnotized patient upon the midwifery staff.

ABDOMINAL DECOMPRESSION

This practice has had occasional advocates subsequent to its initial description by HEYNS (1959)(13).It provided pain relief by relaxation of the muscles of the anterior and posterior abdominal walls, thus uterus is able to move forward freely during a contraction, but unfortunately its analgesic effect is very less.

TRANS CUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)

An electrical impulse is applied to the sensory nerves of the target organ using electrodes attached to the skin at appropriate sites. This has proved to be of some benefit during the first stage of labour, but analgesia in the second stage of labour is very insufficient. (Miller Jones 1980) (14)

ACUPUNCTURE

The limited evidence available strongly suggests that this is ineffective in preventing labour pains (Wallis et al 1974)(15)

PARENTERAL NARCOTICS

Despite controversy, physicians quickly incorporated systemic opiods into practice, largely because of maternal wish .Systemic opioids was in use since 18th century . Use of parenteral methods was developed in parallel to the inhalational methods.

Gilbert in1870 tested a combination of chloroform and morphine. In 1902, Von Steinbuchel used a combination of morphine and scopolamine in labour which makes women amnesic known as" Dammerschlaff which means twilight sleep". It remained popular for some time, but eventually fell into disrepute because of neonatal asphyxia and inadequate pain relief.(16)Various workers have used agents like pethidine, chloral hydrate and barbiturates with varying degrees of success(17)

Pethidine (meperidine), an opioid agonist, is one of the commonly used opioid . Its usual dose is 50 mg intramuscularly. It's not an effective analgesic for labour pains(18) .Nausea , vomiting, loss of FHR variability, neonatal respiratory depression, are its frequent side effects.

PENTAZOCINE

Pentazocine which is a partial agonist has a few advantages over pethidine in obstetric analgesia. It can be safely used as it rarely produces low APGAR scores even in high doses, and fetal heart rate almost always remains unaffected by its use. Nevertheless biggest disadvantage of the drug is its unpleasant hallucinogenic side effect and its limited pain relief.

KETAMINE

Ketamine is an N-methyl-D-aspartate (NMDA) receptor antagonist that produces dissociative anesthesia .Intravenous ketamine, as a sole anaesthetic for relief of labour pains is not safe as it may compromise the airway. Its dose is 0.5 to 1 mg/kg or 10 mg every 2 to 5 minutes to a total of 1 mg/kg in 30 minutes during labour (19).its' main side effects are hypertension, allergic reactions, and neonatal respiratory depression.

BENZODIAZEPINES

Benzodiazepines such as diazepam (Valium), lorazepam (Ativan), and midazolam (Versed) can be used as sedatives in labour. But these drugs are found to cross the placenta (20) and side effects include hypotonicity, decreased activity, respiratory depression and decreased response to metabolic stress.(21)

Local anesthetic techniques

Local anesthesia gained its popularity with the advent of syringes and hypodermic needles.

PARACERVICAL BLOCK

Gellert first described the paracervical block in 1926. It is of significance in the early stages of labour and is an alternative technique for a pregnant woman who does not want or cannot receive a neuraxial block. It provides pain relief for the

first stage of labour. Local anesthetic is injected submucosally into the fornix of the vagina lateral to the cervix to block nerve transmission through the paracervical ganglion. Because this block does not affect somatic sensory fibers from the perineum, it offers no pain relief for the second stage of labour(22).Because of high association of fetal heart rate deceleration after the block it's use is markedly reduced.(baxi et al 1979)(23)

PUDENDAL BLOCK

Pudendal nerves can be easily anesthetized through a transvaginal approach, by injecting local anesthetic behind each sacrospinous ligament.(24) it can be used as an analgesic for vaginal delivery and forceps delivery ,but not useful as a labour analgesic. Complications from this technique are rare, but include anesthetic toxicity, infection, and hematoma formation.

EPIDURAL ANALGESIA

LUMBAR EPIDURAL BLOCK

Epidural analgesia in labour was first described by Von Stoeckel in 1909. He used procaine to produce what he termed as "sacral anaesthesia'. The use of lumbar epidural analgesia was made possible by the description of pain pathways by Aburel in 1930. As early as 1901, Tuffier had attempted lumbar epidural analgesia. In 1906, Sellheim described the paravertebral block. The

lumbar approach to the epidural space for analgesia in labour was first used by Graffagnino and Seyler in 1938. In the next decade, Flowers and colleagues recommended using continuous lumbar epidural with a catheter (25).

Among all the techniques available, the epidural analgesia is the gold standard in alleviating labour pain and is safe for both the mother and the fetus (26). Use of low concentrations of local anaesthetics produce only selective sensory blockade, thereby sparing the motor fibres, thus diminishing adverse effect of motor blockade, their effect can be potentiated by the use of adjuvants like adrenaline, clonidine and opioids. Among these, opioids are the most commonly used.

COMBINED SPINAL EPIDURAL (CSE)

This technique has gained a lot of popularity over a period of time. Since CSE allows ambulation of the parturient it is also called as WALKING EPIDURAL .The effect of this analgesic technique on the progress of labour and the risk of dystocia need to be further evaluated. Studies shows that CSE in early labour is associated with rapid cervical dilatation when compared to conventional epidural analgesia(27)

- ITS ADVANTAGES OVER CONVENTIONAL EPIDURAL ANALGESIA-
    - ü Fast onset of action(2-5min)

- Immediate sacral block
- Less maternal and fetal drug exposure
- Minimal or no motor block
- No acute sympathetectomy
- Decreased incidence of failed epidural analgesia

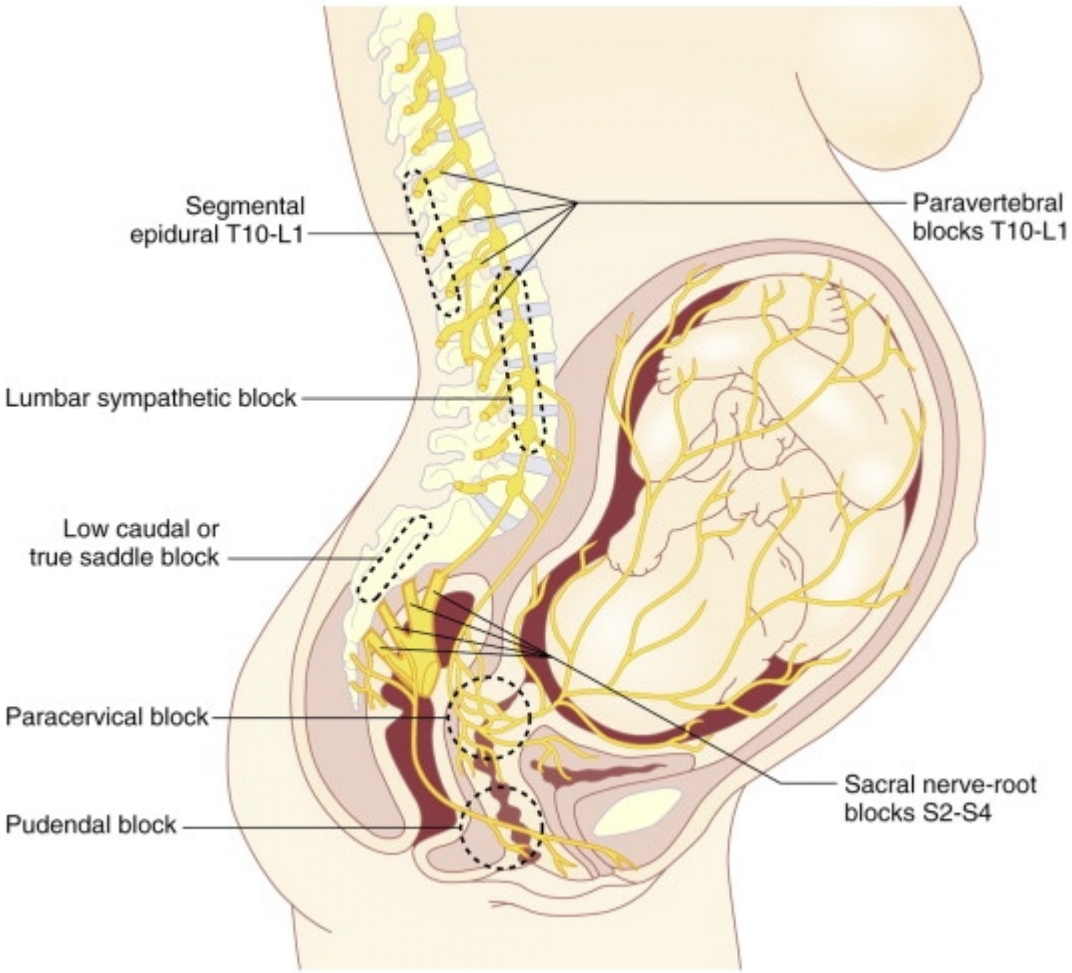
- DISADVANTAGES
  - Possible increased incidence of fetal bradycardia
  - Delayed verification of functioning epidural catheter
  - Increased pruritis

CONTINOUS EPIDURAL INFUSION

Continuous infusion has the benefit that it allows for a continuous level of comfort and pain relief rather than waiting for intermittent epidural top-ups.

PATIENT CONTROLLED EPIDURAL ANALGESIA

PCEA is a novel method of the drug delivery system, has several advantages, including the ability to reduce the drug dosage, with excellent maternal satisfaction and reduces the demand of monitoring staff. Analgesia is established by means of either a spinal or epidural block, the catheter is connected to the PCEA device and the patient can then self-administer further boluses as required. Some authors advocate a continuous infusion with patient-controlled top-ups, whereas others suggest a bolus-only technique (28)



Pathways of labour pain illustrating the nerve pathways responsible for pain in the various stages of labour and the types of blocks that can block nerve impulse transmission through these pathways to alleviate labour pain. (from Eltzchig HK, Lieberman ES, Camann WR: Regional anesthesia and analgesia for labor and delivery. N Engl J Med 348:319, 2003.)

ANATOMY OF EPIDURAL SPACE IN LABOUR

DEFINITION

First described by corning in 1901. Epidural space is a space in the bony cavity of the spinal canal outside the dural sac. It extends from foramen magnum to the coccyx communicating laterally with the paravertebral space through the intervertebral foramina.

CONTENTS OF EPIDURAL SPACE

The epidural space contains nerve roots that decussate from foramina to peripheral location, lymphatics, fat, areolar tissue, and blood vessels, which include the well organized batson venous plexus (29)

FAT AND AREOLAR TISSUE

The epidural space contains fat, but since the dural sac fills the bony spinal canal, this is usually just a thin transparent film of areolar tissue(30)

EPIDURAL VEINS (31)

These veins form a network that run in four main trunks along the space. At each vertebral level ,they communicate with venous rings ,with the basivertebral veins on the posterior aspect of each vertebral body and with the ascending and deep cervical ,intercostals , iliolumbar, and lateral sacral veins. They connect

with the intracranial veins above and pelvic veins below ,so that air or other local anaesthetic solution injected into one of them may ascend straight to brain. (32)

ARTERIAL SUPPLY

Arteries enters the epidural space at each inter vertebral foramen and supply spinal cord, adjacent vertebra, and ligaments. These arteries are from the vertebral, ascending cervical, deep cervical, intercostals and lumbar and ilio lumbar arteries. They anastomose with their neighbours above and below, cross the midline, and lie chiefly in the lateral parts of the epidural space.

NERVE ROOTS

31 PAIRS OF SPINAL NERVES with their dural cuffs traverse the space on their way to intervertebral foramina, the lower one travelling at an increasingly oblique angle.(30)

EPIDURAL SPACE IN PREGNANCY

The epidural space in pregnant patients is at a distance of about 4-5 cms from the skin. The distance from the postero medial border of ligamentum flavum to the dura mater is greatest in the second lumbar interspace ranging between 4-8 mm. Hence an epidural needle inserted by the midline approach should enter the space as close to the midline as possible to maximize the distance between the

ligamentum flavum and the dura.

In pregnancy there is widening of the pelvis resulting in a head down tilt of the spine in the lateral position affecting the spread of drugs (33).

In pregnancy there is high tendency for having presacral edema, making landmark identification more difficult.

Hormonal changes affect vertebral ligamentous structure and may make the ligamentum flavum softer (34).Preganant patients do not flex their lumbar spine optimally, hence tuffiers' line will move more cephalad.

EPIDURAL VOLUME

Epidural veins are veins of the vertebral venous plexus, which form an alternative pathway by which blood can reach the lower extremity. It is of special significance in pregnancy for compensating for the obstruction to the inferior venacava.(30,33)

EPIDURAL PRESSURE

In non pregnant subjects lumbar epidural space pressure is normally 1cm h20.In parturients in early labour, pressure in-between contractions in the lateral position averages 1.63 cm h20 and rises to between 4-10 cm h20 by the end of the first stage, assuming supine position will increase the epidural space pressure by upto 50 % and this is proportional to the degree of inferior

venacaval obstruction. (30)

REASONS FOR DECREASE IN LOCAL ANAESTHETIC DOSES ARE

1) Spread of local anesthetic due to epidural venous engorgement.

2) Pregnancy may also enhance neuronal sensitivity to local anesthetics.

3) Decrese in epidural space volume.

4) Increased lordosis.

5)Hormonal and biochemical changes may be responsible for the greater susceptibility to neural blockade during pregnancy.

6)During uterine contraction epidural space pressure increases.

All these factors leads to increase in the extent of epidural block produced by a given dose of drugs (35,36).

PAIN MECHANISM IN LABOUR

PHYSIOLOGY OF PAIN

Traditionally the labour process is subdivided into 3 stages

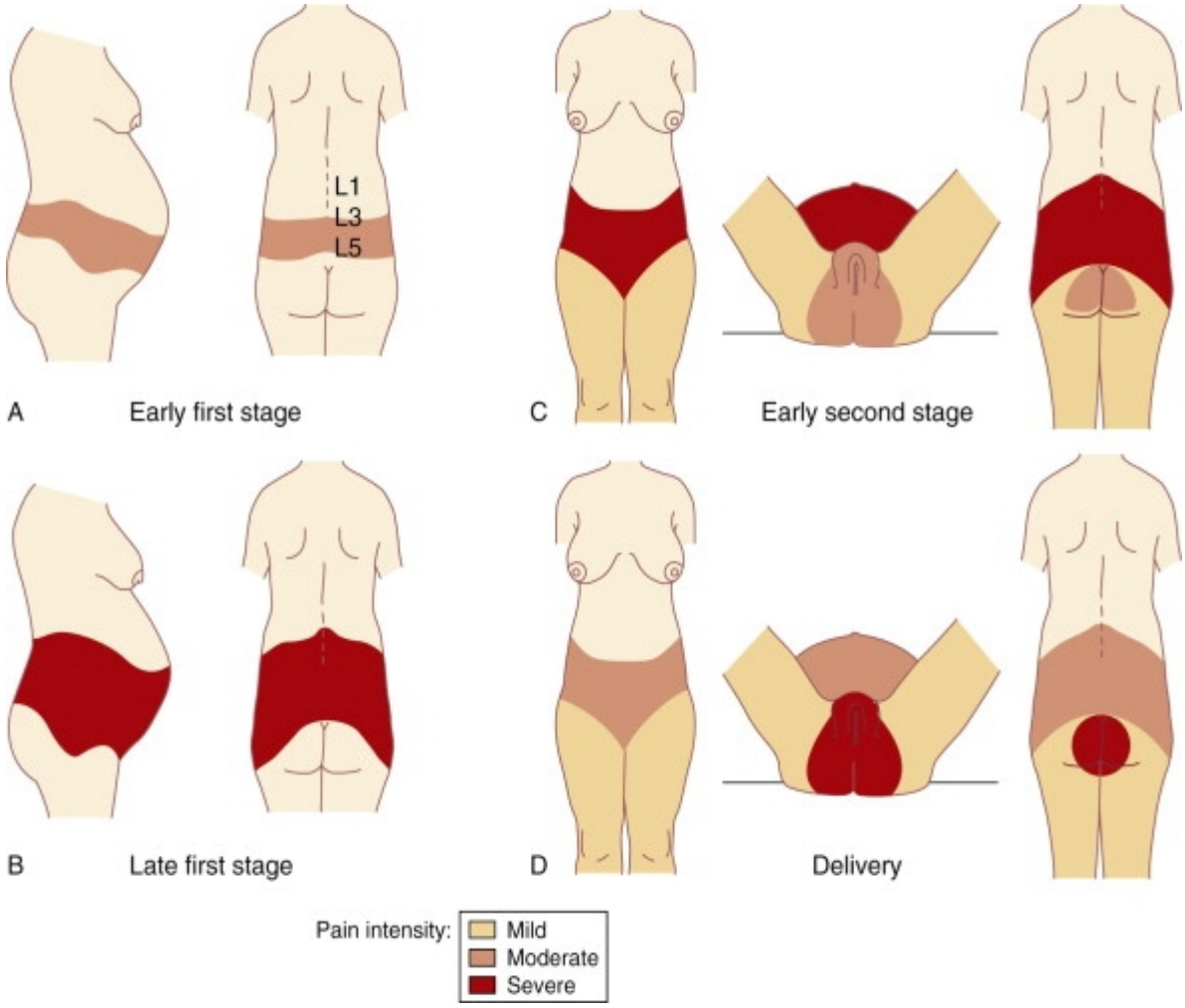
1st stage-from the onset of true labour pains to complete dilatation of cervix upto 10 cm.

2nd stage-from the complete dilatation of cervix to delivery of the fetus

3rd stage –from the delivery of the fetus to the expulsion of the placenta.

PAIN IN THE FIRST STAGE OF LABOUR

In first stage of labour, pain impulses arise from the uterine contractions which results in myometrial ischemia, which eventually causes the release of bradykinin, histamine, and serotonin. In addition, stretching and distention of the lower uterine segment and cervix may stimulate mechanoreceptors. These noxious impulses follow the sensory nerve fibers that accompany sympathetic nerve endings; they travel through the paracervical region and the hypogastric plexus to enter the lumbar sympathetic chain(37).These stimuli enter the spinal cord at the T10, T11, T12, and L1 spinal segments. Mostly patients describe this pain as dull in nature and of poorly localized nature. With onset of the second stage of labour and stretching of the perineum, Stretching and tension of the bladder, urethra and rectum, Stretching and tension of the ligaments and muscle of the pelvic cavity , somatic afferent nerve fibers transmit impulses through the pudendal nerve to the spinal cord at the S2, S3, and S4 levels.



Distribution and intensity of laboUr pain during each stage of labor and delivery. In the early first stage (**A**), pain is referred to the T11 and T12 dermatomes. During the late first stage (**B**), pain also extends to the T10 and L1 dermatomes. In the second stage (**C**), in addition to the dermatomal distribution of late first stage, pain is also felt as pressure in the lower part of the back and perineum and the upper part of the legs. During the end of the second stage and for delivery (**D**), pain originates from the perineum. (38)

Labour may slow down further if the perineum is anaesthetized too early in labour due to abolition of ‘ferguson’s reflux ‘.The afferents of this reflux arc come from receptors of the cervix and the vagina and pass centrally to stimulate oxytocin secretion from posterior pituitary. However this defect can be readily overcome by exogenous oxytocin infusions.(39)

In summary, the epidural blockade appears to have no direct depressant effect on the uterine contractility besides abolition of the ferguson reflux. Besides if early blockade of sacral segments is prevented, the incidence of instrumental deliveries could be reduced.

INDICATIONS FOR EPIDURAL ANALGESIA(40)

- Commonest indication is maternal request ,but it can be given in medical disorders like
- Pre-eclampsia
- Multiple pregnancy
- Breech presentation for vaginal delivery
- Diabetes mellitus
- Respiratory disease e.g. asthma
- Cardiovascular disease
- Sickle cell disease
- Premature labour
- Prolonged labour
- Intrauterine growth retardation
- Anticipated instrumental delivery

Contraindications (40)

1) Patient refusal
2) Active maternal hemorrhage

3) Local sepsis at epidural site

4) Septicemia as evidenced by pyrexia (above 37.5 Degree Celsius)

5) Maternal coagulopathy (inherited or acquired)

6) Raised intracranial pressure (not benign intracranial HT)

7) Uncorrected hypovolemia

8) Fetal distress.

9) Inadequate staff to look after the mother.

10) Fixed cardiac output state

Relative contraindications

1) Technical difficulties e.g. previous back surgery, kypho scoliosis, gross obesity

2) Neurological disorders

COMPLICATIONS OF EPIDURAL ANALGESIA(40)

- **MATERNAL**

IMMEDIATE

- High or total spinal block
- Hypotension (systolic blood pressure < 100mmHg or a decrease of 20%

below pre block average)

- Urinary retention
- Local anesthetic induced convulsions
- Local anesthetic induced cardiac arrest
- Vesibulocochlear dysfunction

DELAYED

- Postural puncture headache
- Transient backache
- Epidural abscess or meningitis
- Permanent neurologic deficit (Very rare)
- Broken cannula tip retention

v FETAL

IMMEDIATE

- Direct effect of local anesthetic-Fetal distress.

DELAYED

- Neurobehavioral changes.

HYPOTENSION:

When epidural analgesia is given to a patient, anesthetist should cautiously preload the patient with ringer lactate solution (10-15 ml/kg) and avoid

aortocaval compression which prevents the patient from hypotension which is considered as one of the commonest complication associated with labour analgesia. Intravenous epinephrine 5-10 mg can be given to raise blood pressure. Recently studies backs up the use of phenyl epinephrine (41).

DURAL PUNCTURE AND POST DURAL HEAD ACHE:

Even though the incidence (0.2-0.7 %) shows it as a rare complication yet it has disturbing sequelae of post dural puncture headache that prompts the use of fluid intake, caffeine judiciously. (Cammann et al) (42). However epidural blood patch remains the gold standard for treating this complication.

TOTAL SPINAL BLOCK:

The use of test dose before injecting the drug can very well prevents this complication and its associated sequelae such as hypotension, dyspnoea, unconsciousness and respiratory paralysis. Delivering 100%oxygen, positive pressure ventilation and aortocaval compression should be given encountering this situation.

PRURITIS:

The exact etiology is unkown yet there is a probability for the role of histamine release causing pruritis in epidural analgesia. Evidence shows that neuraxial opioid-induced pruritis mediated through central opioid receptors.

Opioidantagonists (e.g.naloxone) or partial agonist-antagonists (e.g. nalbuphine) are effective in relieving pruritis(43).

BLOODY TAP:

It's incidence is 10%.It is the epidural venous plexus distortion which occurs during pregnancy which causes bloody tap and with uterine contraction this gets aggravated. This complication can be managed by repositioning the catheter in an adjacent space. (44)

BACK ACHE:

The incidence of back ache after epidural anesthesia has varied from 14-45%(45) . Studies have concluded that there is no statistical difference in the incidence of postpartum backache among women who delivered vaginally with or without epidural analgesia (46).

SHIVERING:

Incidence of shivering in obstetric analgesia ranges from 20-50% and in patients without epidural analgesia was just 22%, showing that an epidural induced peripheral vasodilatation may not be fully responsible and other reasons should be ruled out for back ache.(44)

URINARY RETENTION:

The rapid onset of detrusor muscle relaxation following the sacral spinal action of opiods and local anesthetics is the reason for urinary retention in spinal

anesthesia. Hence the mother should be encouraged to void regularly and if required intermittent catheterization should be done as well.(44)

Other rare complications include spinal and epidural haematoma and neuropathy ,motor blockade which are very rare (47).

THE ADVANTAGES OF EPIDURAL OBSTETRIC ANALGESIA:

- PAIN RELIEF

- It provides superior pain relief when compared to other methods of analgesia.
- It provides pain relief over prolonged periods of time of varying intensity.
- It relieves fatigue of the mother, makes delivery more comfortable.
- It provides anesthesia for instrumental or operative deliveries.

- HYPERTENSION

Epidural analgesia prevents the sympathoadrenal over activity that is characteristic of preeclampsia, produces favorable hemodynamic changes and improves intervillous blood flow (uteroplacental circulation) (48).

- TRIAL OF LABOUR

Review of studies in several 100 women with previous caesarean sections suggest that epidural analgesia does not masks the danger of scar dehiscence or rupture .Epidural local anesthetics blocks the pain of uterine contraction (

which is conducted by AD fibres) but not the pain of scar rupture,(predominantly C fibre stimulation) thus it helps in the diagnosis of scar dehiscence.(49)

- CARDIAC DISEASE

Cardiac patients have tendency for failure during labour. Epidural analgesia can reduce the work load of heart caused by increased cardiac output(induced by pain).

- PULMONARY DISEASE

Epidural analgesia blunts the hyperventilation-hypoventilation cycle that occur during uterine contractions, thus preventing maternal respiratory alkalosis and prevents hypoxia to the fetus.

- CONVERSION TO OBSTETRIC ANAESTHESIA

For patients with epidural analgesia, if there is any need for emergency caesarean section like fetal distress, arrest of progress of labour or suspected scar dehiscence; analgesia can easily be converted to anesthesia by simply increasing the dose of the drug.

- PRETERM LABOUR AND TWIN PREGNANCY

Studies shows that neonatal outcome in preterm labour is unaltered by use of epidural analgesia. Labour is less stressful and delivery is less traumatic. Studies suggest that epidural analgesia was linked with decreased neonatal

morbidity among low birth weight babies. Outcome is found to be good in second twin in multiple pregnancy and breech presentations as in these cases epidural analgesia increases intervillous circulation, decreases catecholamine release and aids good relaxation of pelvic floor for manipulative procedures.(50)

- BENEFIT IN INCORDINATE UTERINE ACTION

By reducing the catecholamine release associated with uterine contraction, epidural block can improve uterine contractility and rhythmcity.

Studies have shown that mothers who received epidural labour analgesia spent only less time in the delivery rooms and had decreased incidence of post partum depression .(51)

CONTROVERSIES

- It’s a common myth that epidural analgesia is associated with increased rate of caesarean deliveries, but various studies with statistical data shows that there is no association (52)
- Use of epidural analgesia can prolong the duration of labour by an average of one hour in 1st stage and 1 hour in second stage. It’s also proved that labour analgesia is also associated with higher incidence of occipito posterior presentation, need for augmentation of labour with oxytocin, and higher number of instrumental deliveries. All these side effects can be curtailed with the use of low dose epidural infusion (53).
- Many hospitals withhold epidural analgesia during second stage of labour to improve a woman's ability to push and reduce the rate of instrumental delivery. But of late studies have shown that this does not result in the statistical variation in the mode of delivery and most often results in inadequate pain relief from patient point of view.(54)

- Task force guidelines 2007 jointly issued by the ASA and the Society of Obstetric Anesthesiologists and Perinatologists (SOAP) has concluded that epidural analgesia can be recommended to mothers willing for VBAC (vaginal birth after caeserian section).
- Epidural analgesia causes transient FHR changes hence this factor should

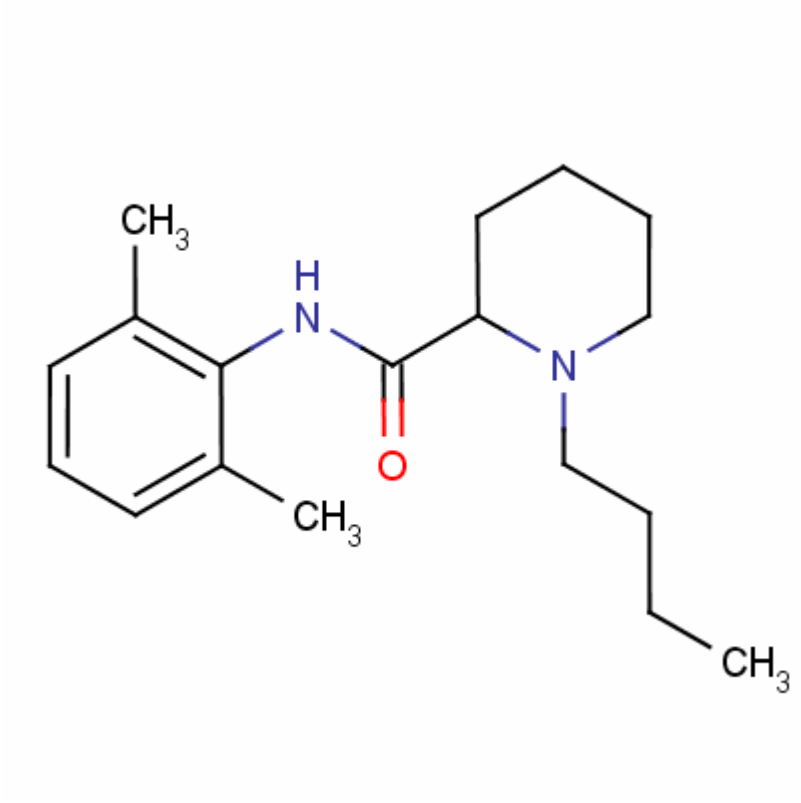
be considered to prevent inappropriate obstetric management decisions. This FHR abnormalities can be effectively managed by maternal repositioning , oxygenation, hydration and sometimes with tocolytics. (55)

PHARMACOLOGY

- **BUPIVACAINE** (56,57)

This amide local anaesthetic was first synthesized by ekenstorm and associates in 1957,and clinically by L.J.Telivuo in 1963

- STRUCTURE AND CHEMISTRY:



Bupivacaine has a pK_a of 8.05 (highly ionized at physiologic pH) and is 95% protein bound; thus, it has limited transfer to the placenta when compared with

other local anesthetics . The rate and degree of diffusion to the placenta is governed by :

1) The degree of plasma protein binding.

2) The degree of ionization.

3) The degree of solubility.

The umbilical vein /maternal blood ratio (UV/M) of the drug at delivery is 0.2-0.4. The speed of onset of action of bupivacaine is marginally slower than that of lignocaine . Peak concentration of bupivacaine, in maternal blood occurs 10-60 mins.

After epidural injection Umbilical vein concentration of the drug is only about 30% of maternal venous concentration.

It is metabolized primarily in the liver, hence should be careful while prescribing for patients with hepatic disorders.

- INDICATIONS AND USAGE:

Indicated for producing local or regional anesthesia or analgesia for all surgical procedures.

Side Effects :

Side effects associated with bupivacaine are mostly systemic toxicity from overdose.

§ SIGNS OF TOXICITY

- Early signs :

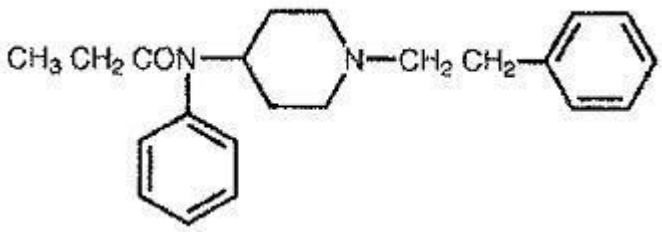
-Tinnitus, light headedness, confusion, numbness, shivering , muscle twitching ,tremors, tonic-clonic convulsion.

- Late signs:

-Unconsciousness, generalized CNS depression, respiratory arrest .

v **Fentanyl** (58,59)

Fentanyl is a synthetic opiod related to the phenylpiperidines. Fentanyl is 1000 times more potent than meperidine and 50-100 times more potent than morphine.



§ MECHANISM OF ACTION:

Opiods acts as agonists at stereo specific opiod receptors at presynaptic and post synaptic sites in the central nervous system (principally brainstem and spinal cord) and outside the central nervous system in peripheral tissues**.** The peak effect occurs within 3 to 5 minutes and has duration of 30 to 60 minutes.

The principal effect of opiod receptor activation is a decrease in neurotransmission. This occurs largely by presynaptic inhibition of neurotransmitter (acetylcholine, dopamine, nor epinephrine, substance P) release, although post synaptic inhibition of evoked activity might also occur.

Fentanyl placed in the epidural space may undergo uptake into epidural fat , systemic absorption or diffusion across into the cerebrospinal fluid . Penetration of dura is considerably influenced by lipid solubility and molecular weight.

After epidural administration, fentanyl blood concentration peaks in 5-10 mins.

Fentanyl is metabolized in liver to polar active metabolites that are then excreted in the bile and urine.

§ DOSAGE AND ADMINISTATION:

Fentanyl is available for injection as 50 microgram/ml .It is also available combined with droperidol as fixed 50:1 mixtures of droperidol and fentanyl (2.5mg of droperidol and 50microgram of fentanyl in 1 ml).

For labour analgesia fentanyl is usually combined with local anesthetic. The bolus dose is usually 50 µg. Along with local anesthetic, infusion is at a dose of 2 µg/ml.

§ SIDE EFFECTS:

Side effects of fentanyl include:

1. Dose related respiratory depression

2. Nausea and vomiting.

3. Decreased gastrointestinal motility.

4. Delayed gastric emptying.

5. Constipation.

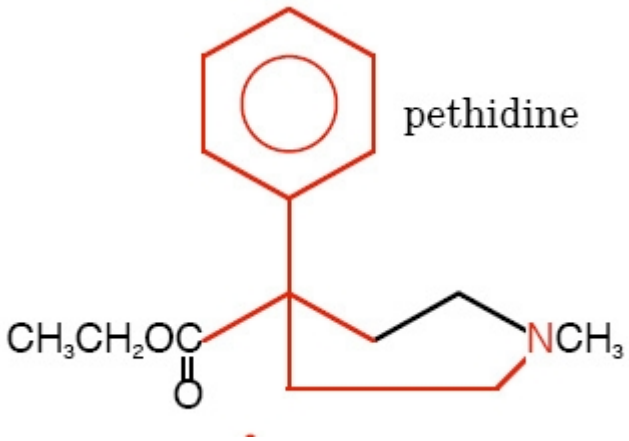
6. Urinary retention.

7. Pruritis.

- **PETHIDINE** (60)

Pethidine was synthesized as an atropine substitute in 1939, and has some actions similar to it. Though chemically unrelated to morphine, it interacts with opiods and its actions are blocked by naloxone.

- CHEMICAL STRUCTURE:



- MECHANISM OF ACTION:

Pethidine exerts its analgesic effects by acting as an agonist at the mu opioid receptor. In addition to the opioidergic and anticholinergic effects, it has local anesthetic activity.

- DURATION OF ACTION:3-4 HOURS
- PEAK ONSET OF ACTION : 40 -50 minutes;

Fetal exposure to pethidine is highest between 2 and 3 hours after maternal

administration.

Pethidine is metabolized in liver with meperidinic acid as the major metabolite and norpethidine as the minor metabolite, both are then excreted in urine.

- DOSAGE AND ADMINISTRATION:

50-100 MG (preferably intramuscular route)

- SIDE EFFECTS:

Nausea

Vomiting

Dizziness

Loss of FHR variability

Neonatal respiratory depression, diminution of muscle tone

Dryness of mouth

Blurred vision

Tachycardia

Tremors, mydriasis, hyperreflexia, delirium, myoclonus, convulsion

Fall in blood pressure

The incidence of respiratory depression and decreased muscle tone depends on the dosage of the drug administered and the time of administration to the laboring mother. Respiratory depression is slightly higher when the dose is 75-

150 mg and when the injection delivery interval was less than 1 hour. (61).Neonatal respiratory depression can be promptly reversed by the administration of naloxone 0.1 ml/kg intravenously to the infant with nil side effects.

Studies have suggested that pethidine does not adversely affect the progress of labour but its efficacy as an analgesic is open to question. One of the few well controlled studies desingned to assess the efficacy of parenteral analgesia (intramuscular or intravenous pethidine) to epidural analgesia for relief of labour pain universally found that epidural technique is more effective (18).

A technique where by incremental doses of a dilute solution of pethidine are administered intravenously by a patient activated system using either an infusion, or a syringe pump offers the prospect of a higher quality of analgesia. Such devices-Cardiff Palliator incorporates safety features designed to avoid any possibility of over dosage. Administered intravenously the drug will begin to exert a beneficial effect within 2-3 minutes. The advisable dose for intravenous infusion is 50 mg diluted with 10 ml of solution. It is important to appreciate that the central midwives board does not stipulate or restrict the choice of narcotic analgesic used by “unsupervised midwives”; A firm indication for the administration of pethidine is in the conduct of labour of a mother with a coagulation defect, of either therapeutic or pathological origin, for whom an epidural is contraindicated.

MATERIALS AND METHODS

The study was conducted in the department of Obstetrics and Gynaecology ,PSG Institute of Medical Science and Research, Coimbatore.

STUDY DESIGN

Prospective randomized controlled trial.

STUDY POPULATION

Study group consists of two groups. Each group has 100 antenatal mothers in labour.

INCLUSION CRITERIA

Singleton pregnancy with vertex presentation

Pregnancy complicated by – hypertensive disorders of pregnancy

– Respiratory diseases

EXCLUSION CRITERIA

- Bleeding diathesis
- Local and systemic sepsis
- Central nevous system disorders
- Previous caeserian section

- Multiple pregnancy
- Mal presentations
- History of hypersensitivity to the drug
- Chronic musculoskeletal disease of the lumbo sacral region
- Mother not willing to use the drug

DRUG USED

1) Inj.Bupivacaine 0.125 % and inj.Fentanyl 2 mcg/ml

2) Inj.Pethidine 50 mg .

MATERIALS

1 ST STUDY GROUP (EPIDURAL GROUP)

1) 18G Tuohy needle

2) 20G epidural catheter

3) Loss of resistance syringe

4) 5cc, 2c and 10cc sterile syringes

5) Hypodermic needles-no.22,23,18

6) Cotton swabs

7) Sponge holding forceps

8) Sterile gown and gloves

9) Betadine, spirit

10) Local anaesthetic solution

11) Emergency kit with laryngoscope, cuffed oral endotracheal tubes, suction apparatus with catheter, inj.atropine, inj.adrenaline, diazepam, avil, thiopentone, and dopamine.

12)Monitor that would measure ECG continuously, blood pressure, respiratory rate and SpO2

2ND GROUP (PETHIDINE GROUP)

1)2 ML SYRINGE WITH NEEDLE

2)COTTON SWAB

METHODOLOGY

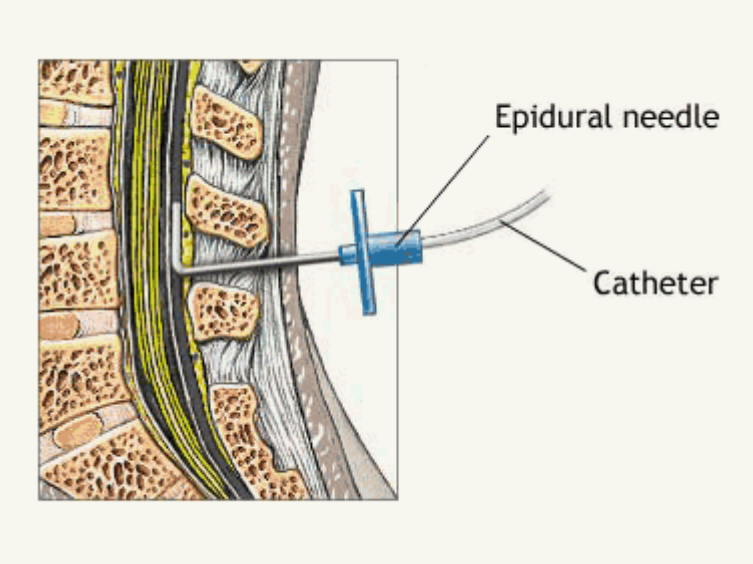
- The procedure was explained to the patient and an informed written consent was taken. A detailed history of the patient was obtained to search for any contra indications and risk factors.

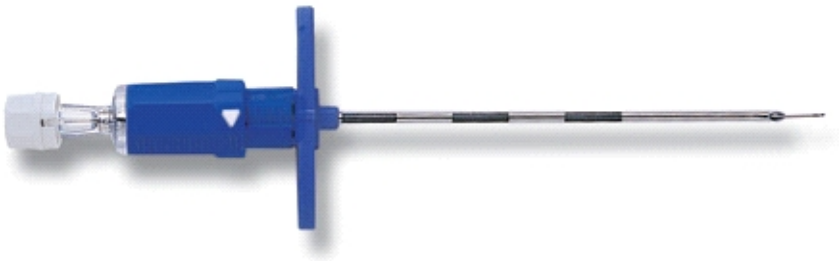
- Baseline maternal blood pressure, maternal pulse, fetal heart rate was

recorded before the onset of the procedure.

- Once the patient gets into active labour with a per vaginal examination showing cervical dilatation of 3cm or more, mother will be randomly allocated to either of the two groups.

METHODOLOGY FOR EPIDURAL ANALGESIA (1 st group)





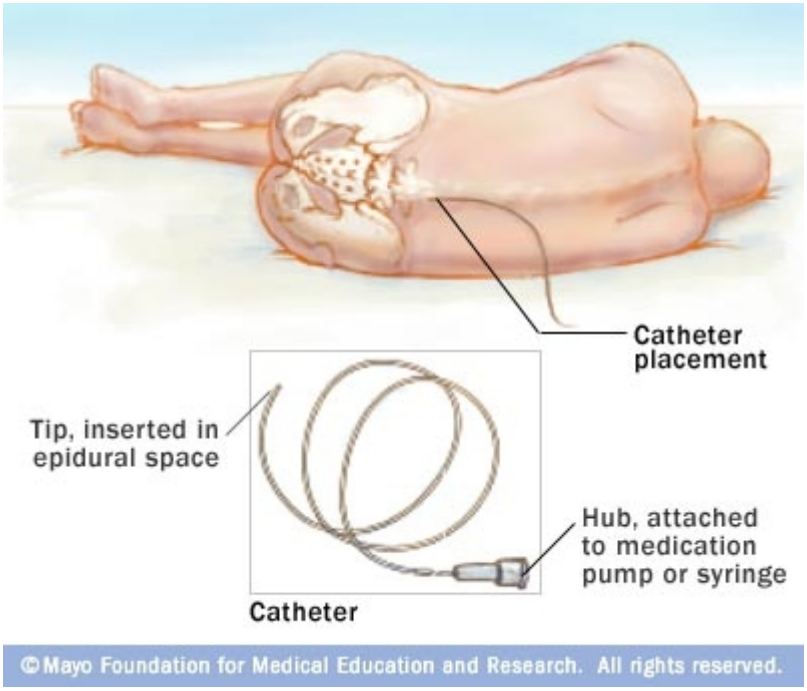
Epidural needle

An 18 guage IV cannula will be inserted into the forearm and patients are well hydrated with fluids at the rate of 15- 20ml/kg over 30 minutes.

- The patient will be positioned in the left lateral position on table and

the back will be prepared with betadine and sterile drapes will be applied.

- A local infiltration with 2ml of 2% lignocaine will be given at the L1-L2 or L2-L3 interspinous space.



- An 18 gauge tuohy needle will be introduced in to the epidural space with the loss of resistance to air technique and a catheter will be threaded into the epidural space for a distance of approximately3- 5 cm.

- A test dose with 3 ml of 2% lignocaine with 1:200000 adrenaline will be injected to rule out intravascular or subarachnoid placement.

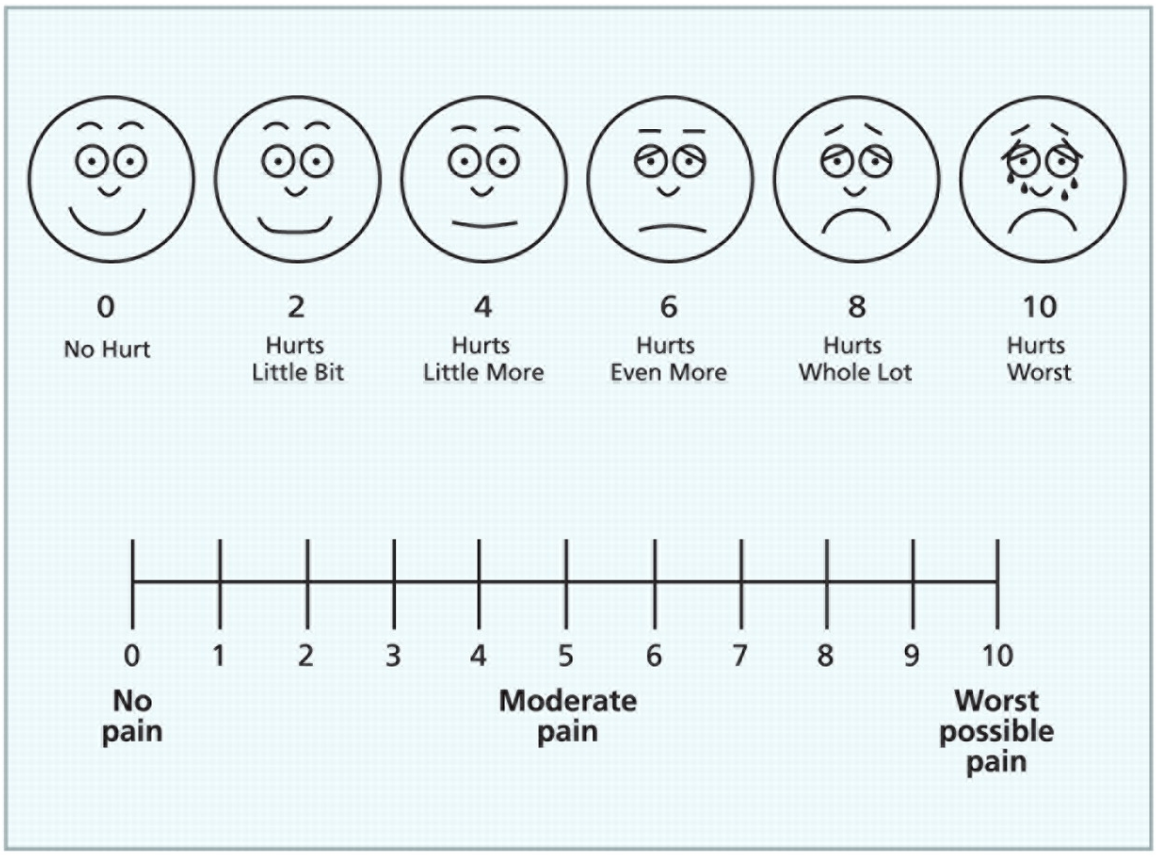
- After confirming catheter ‘s correct placement in the epidural space, a total volume of 8 ml of 0.125 % bupivacaine with 2 mcg/ml of fentanyl

is administered in to the epidural space which will be followed by an incremental infusion of the same drug at the rate of 8-10ml per hour depending on patient's requirements.

- During this period patients will be assessed for the vitals, uterine contractions and fetal heart rate every 5 minutes for 60 minutes following loading dose completion and every 30 minutes thereafter until delivery.

- Afterwards labour will be augmented by intravenous oxytocin infusion as per the institutional protocol.

- Once the contraction begins patient will be shown the visual analogue scale.



- Data will be collected for the intensity of pain, level of sensory blockade, intensity of motor blockade and possible side effects like nausea, vomiting, hypotension, head ache, urinary retention, fever,FHR abnormalities, every 5 minutes for 60 minutes following loading dose completion and every 30 minutes thereafter until delivery.

- Partogram was marked to assess the progress of labour.

- The progress of labour is assessed with changes in cervical dilatation every 3 hours.

- The time interval between the administration of epidural drug to the full

cervical dilatation will be noted.

- The duration of second stage that is full dilatation of cervix to delivery of the baby will be documented.

- Incidence of the instrumental delivery and caesarean section will be recorded and analyzed and post partum complications if any will be noted.

- The baby will be immediately assessed by the consultant pediatrician and the APGAR score of the neonate at 1 and 5 minutes will be recorded and analysed.

APGAR SCORE for assessing newborns			
CRITERIA	0	1	2
Color	Pale or blue	Pink body, blue extremities	Pink body and extremities
Heart Rate	Absent	Less than 100 beats per minute	Greater than 100 beats per minute
Respiration	Absent	Slow and irregular	Good breathing with crying
Reflex Response	Absent	Grimace or noticeable facial movement	Coughs, sneezes or pulls away
Muscle Tone	Absent	Some flexion of extremities.	Active and spontaneous movement of limbs
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- Any untoward incident will be documented and a deviation from the protocol will disqualify the data of that patient from the study.

- Hypotension is defined as a fall in mean blood pressure more than 20%

from the pre-operative blood pressure or a fall in blood pressure less than 100 mm of Hg.

- Motor and sensory block and sedation and side effects including itching, nausea and vomiting were evaluated every 5 minutes for 60 minutes following loading dose completion and every 30 minutes thereafter until delivery.

- Motor function was assessed by asking simple questions like whether the patient is able to lift her legs from bed or is able to bend her knees and the sensory block was assessed by pin prick method.

- Sedation was also evaluated by a five point scale (1- wide awake; 2-drowsy;3-dozing;4-mostly sleeping;5-awakening only when aroused).

- Intrathecal placement of the catheter can be diagnosed by hypotension, motor block in the legs, warm upper foot, sudden disappearance of labour pains(usually epidural takes 10 minutes to act).

- Intravascular placement can be diagnosed from patient complaints – metallic taste in the mouth, tingling of lips,dizziness,tinnitus, Heart rate increases by >30 bpm with in one minute and cardiovascular collapse may follow.

2ND GROUP (PETHIDINE GROUP)

Once the patient enters into the active phase of labour i.e., ≥ 3 cms dilatation, with good uterine contractions, base line pulse, blood pressure, fetal heart rate are recorded . Injection pethidine 50 mg IM was given as a single dose. Pulse rate, respiratory rate, blood pressure, FHR were recorded every 30 minutes, pain score was noted according to visual analogue scale. Partogram was marked to assess the progress of labour.

OUTCOME MEASURED

1. Change in vital parameters, fetal heart rate.
2. Side effects of the drug.
3. Assessment of analgesia according to visual analogue scale.
4. Duration of labour, duration of second stage of labour, mode of delivery was noted and recorded.
5. Condition of the baby is assessed by APGAR score at 1 minute and 5minute interval after the delivery of the baby and the need for NICU admission.
6. Any complications during the course of labour were recorded. Patient was observed for 2 hours postpartum.

RESULTS

STATISTICAL ANALYSIS

The statistical analysis was performed using the statistical software SPSS 16.0. Descriptive analyses were performed by the calculation of minimum, maximum median and percentages. The continuous variables were analyzed using the Mann-Whitney U test and categorical data were compared using a Pearson $\chi 2$ test or Fisher's exact test, depending on the data meeting assumptions. Significance was defined as $P<0.05$.

RESULT:

TABLE 1: AGE DISTRIBUTION OF TWO STUDY GROUPS

Age	**Epidural (n=100)**	**Pethidine(n=100)**
	Frequency	Frequency
≤ 20	4 (4%)	15 (15%)
21-30	93 (93%)	75 (75%)
31-40	3 (3%)	10 (10%)
Total	100	100

SUMMERY OF AGE

	Epidural (n= 100)	**Pethidine (n =100)**
Min	19	19
Max	31	37
Median	25	25

The Mean rank of Epidural and Pethidine group were 99.48 and 101.52 respectively In Both groups the median age was 25. We ran a Mann-Whitney U test to evaluate the difference in the age distribution in two groups. Results showed no significant statistical difference between both the groups(U = 4898.5, P= 0.803)

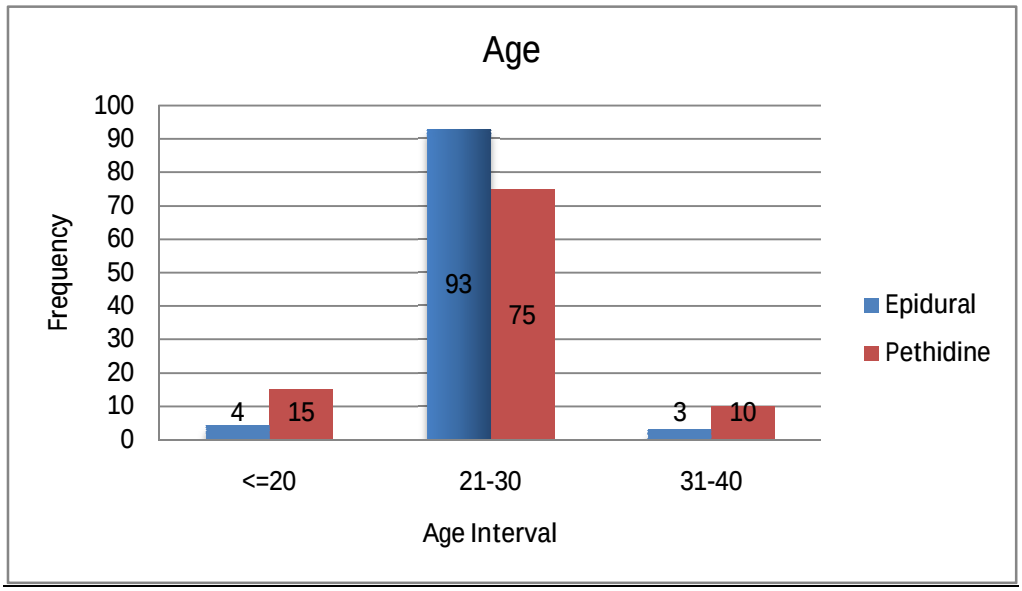
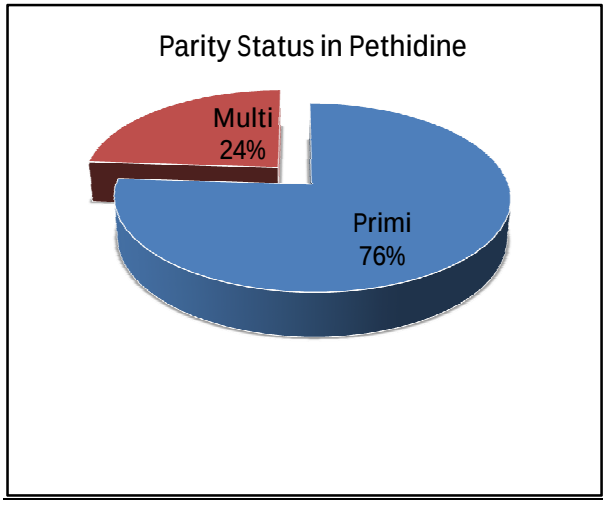
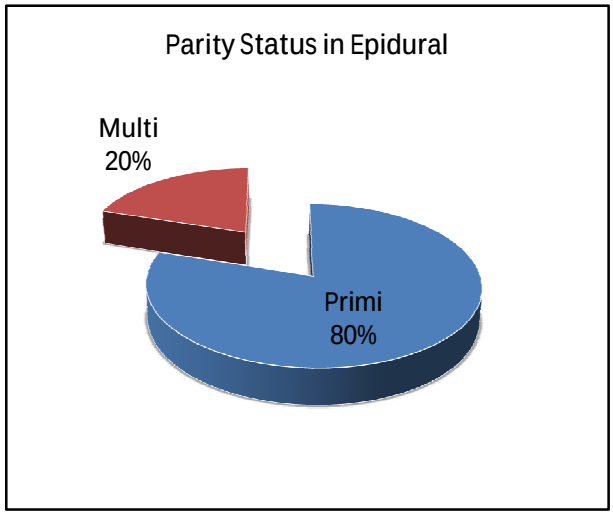


TABLE 2: PARITY STATUS

Status	Epidural (n=100)	Pethidine (n=100)	χ^2	df	P value
Primi	80 (80%)	76 (76%)	0.466	1	0.495
Multi	20 (20%)	24 (24%)			
Total	100	100			

We used Chi-Square test for finding the difference between parity status in Epidural and Pethidine group. The Chi-Square value was 0.466, (P=0.495) showing no significant difference in the parity status.





The above pie diagrams shows the distribution of parity status in two study groups .

TABLE 3: GESTATIONAL AGE

Gestational Age(weeks)	Group		Chi-square value	df	P value
	Epidural (n=100)	Pethidine (n=100)			
36-37	8 (8%)	8 (8%)	0.531	2	0.767
38-39	54 (54%)	60 (60%)			
40-41	36 (36%)	32 (32%)			

Chi-Square test was used to analyze the difference in the gestational age between both Epidural and Pethidine group. Chi-Square Value was 0.531 with df =2, (P = 0.767) showing no statistical difference in the gestational age between two groups.

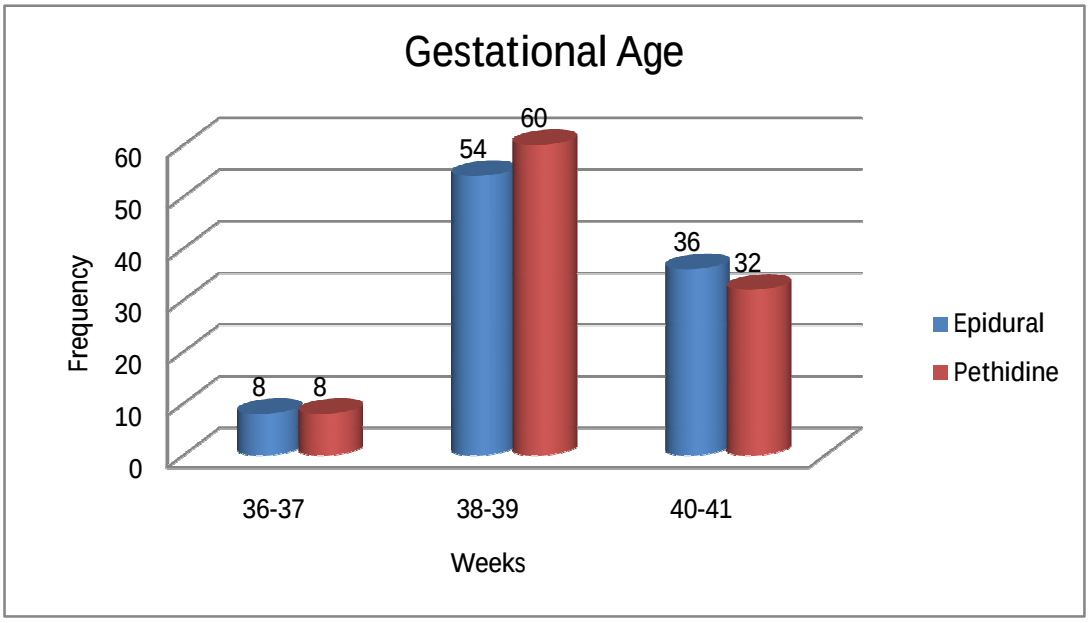


Table 4: BOOKED

	Epidural (n=100)	Pethidine (n=100)
Booked	76 (76%)	76 (76%)
Not booked	24 (24%)	24 (24%)

76% cases in both epidural and pethidine group were booked in PSG while 24 % cases were booked outside.

Table 5: CERVICAL DILATATION AT THE TIME OF EPIDURAL BLOCK OR PETHIDINE

Cervical dilatation	Epidural	Pethidine
3 cm	3 (3%)	4 (4%)
>3cm - <5cm	97 (97%)	96 (96%)

.

Using Fisher's exact test, the cervical dilatation at the time of Epidural analgesia and Pethidine were compared. And we could not found any significant difference (P>0.05) between two groups.

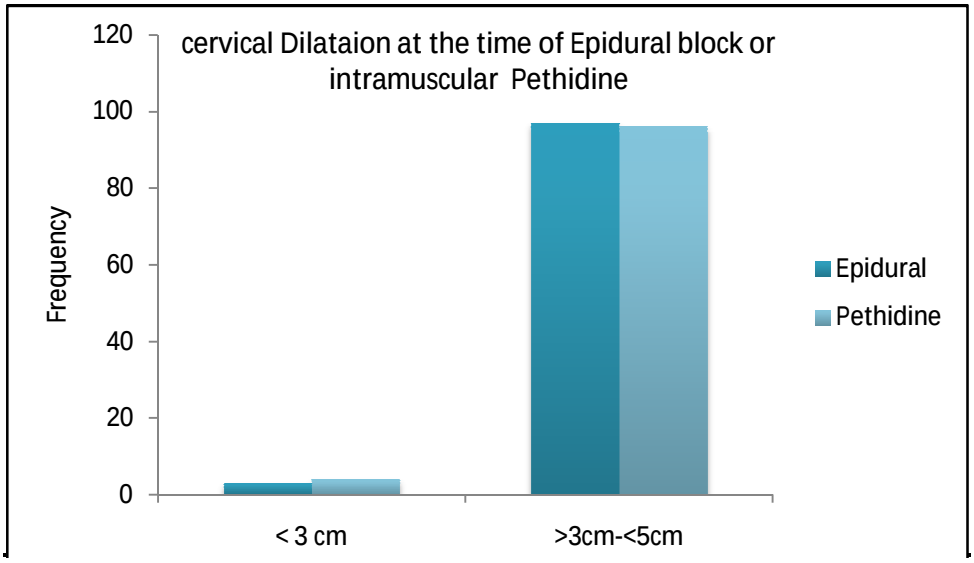


Table 6: PULSE RATE AND BP

	Pulse Rate		Blood Pressure	
	Normal	Tachycardia	Normal	Hypotension
Epidural	99 (99%)	1 (1%)	99 (99%)	1 (1%)
Pethidine	100 (100%)	0 (0%)	100 (100%)	0 (0%)

Analysis was done using Fisher's exact test. Statistical analysis showed (P>0.05) and (p>0.05) for pulse and blood pressure respectively after the administration of the drug. Hence concluding no significant difference .

Table 7: PAIN SCORE

14% patients in epidural group had no pain, while there was no one in pethidine group without any pain. Majority of patients in epidural group had only mild pain (68%) while majority of patients had severe pain (55%) in pethidine group.32 % patients in pethidine group complained of worst possible pain while only 1 % patient in epidural group had the worst possible pain.

Table 8: PAIN SCORE

Pain Score	Group		Total
	Epidural (n=100)	Pethidine (n=100)	
No pain	14 (14%)	0 (0%)	14
Mild	68 (68%)	3 (3%)	71
Moderate	8 (8%)	10 (10%)	18
Severe	9 (9%)	55 (55%)	64
Worst Possible	1 (1%)	32 (32%)	33

Chi-Square test was used to compare the difference in pain score. The chi-Square value was 135.9, showing significantly lower ($p<0.001$) pain score in Epidural group compared to Pethidine group.

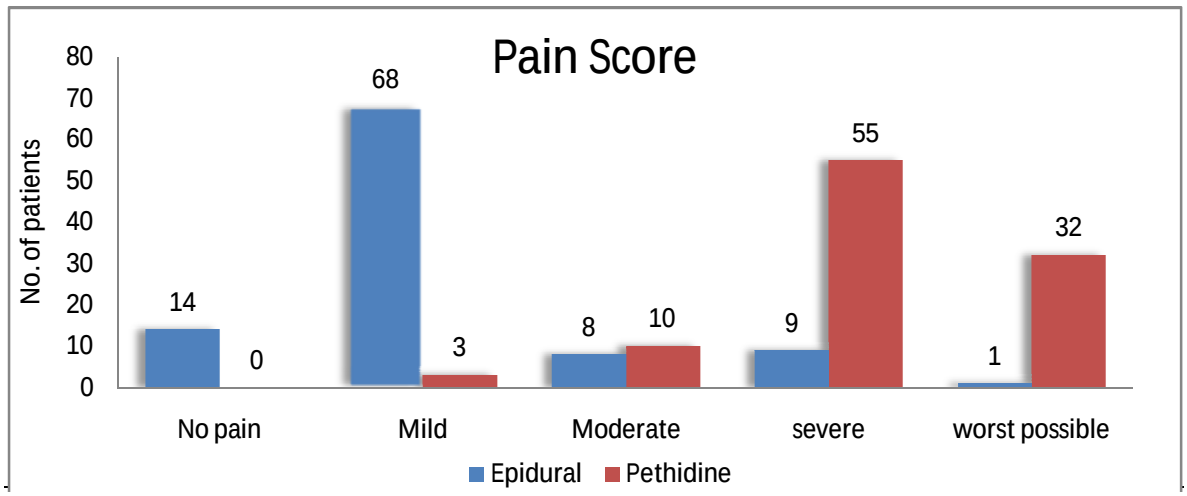


Table 9: USE OF OXYTOCIN

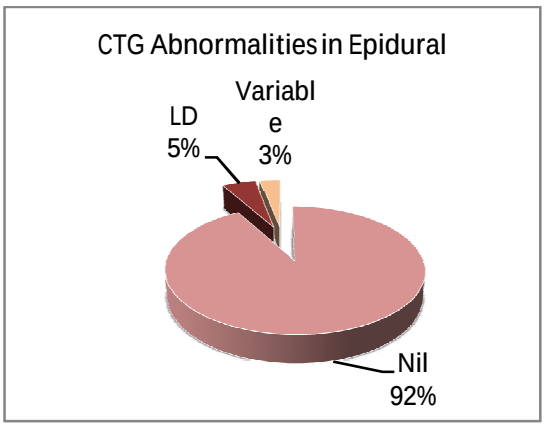
	Epidural (n=100)	**Pethidine (n=100)**
Oxytocin	100 (100%)	100 (100%)

Table shows that all patients in both the groups received oxytocin for augmentation of labour.

Table 10: CTG ABNORMALITY

	Epidural (n=100)	**Pethidine (n=100)**
No Abnormality	92 (92%)	84 (84%)
Late Declaration	5 (5%)	8 (8%)
Variable Deceleration	3 (3%)	8 (8%)

Using Chi-Square test, CTG abnormalities between both the groups were compared. The Chi-Square value was 3.329, and (P=0.189) indicating no statistical significant differences.



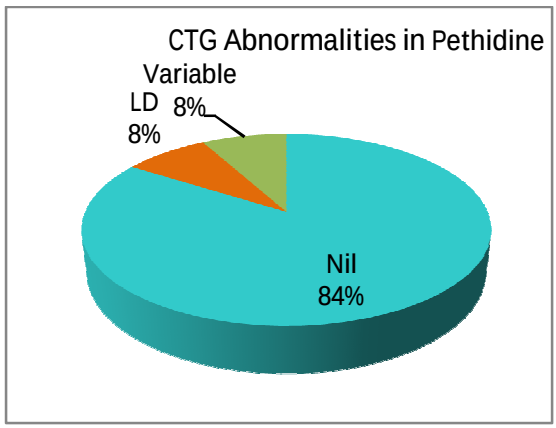
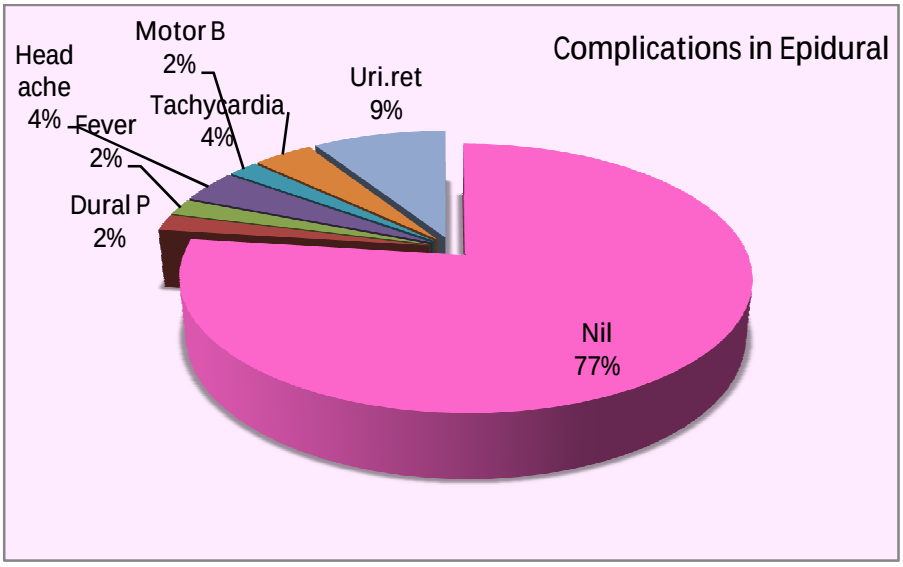


Table 11: COMPLICATIONS

I. COMPLICATIONS IN EPIDURAL GROUP

Complications	Percentage
Nil	77 (77%)
Dural Puncture	2 (2%)
Fever	2 (2%)
Head ache	4 (4%)
Motor Blockade	2 (2%)
Tachycardia	4 (4%)
Urinary retention	9 (9%)

77% of patients in epidural group had no complication during the study period. Incidence of Dural puncture, fever and motor blockade were 2%, incidence of head ache and tachycardia were 4% and 9% patients complained of urinary retention.



II. COMPLICATIONS IN PETHIDINE GROUP

Complications	Percentage
Nil	70 (70%)
Vomiting	30 (30%)

70% patients had no complications, while 30 % patients complained of vomiting.

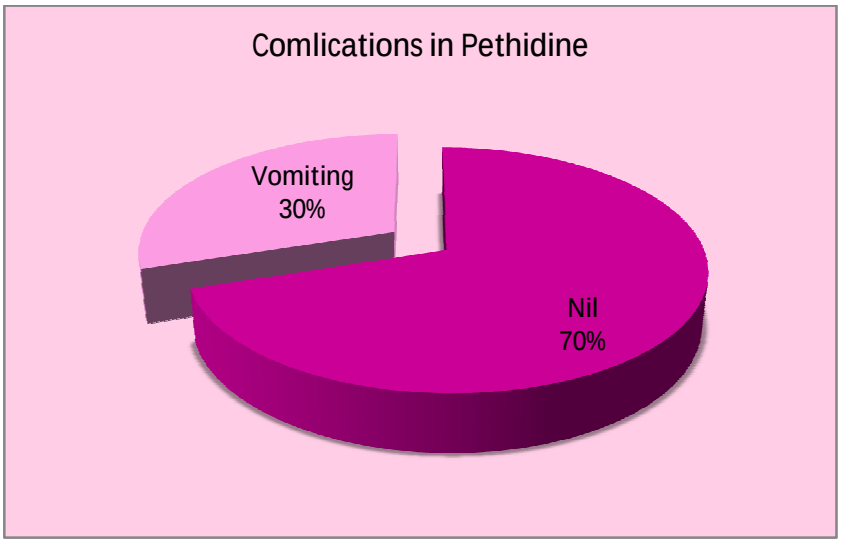


Table 12: SEDATION:

	Epidural(n=100)	Pethidine(n=100)
Wide awake	40 (40%)	3 (3%)
Drowsy	54 (54%)	37 (37%)
Dozing	0 (0%)	34 (34%)
Mostly sleep	6 (6%)	26 (26%)

Sedative effect of the drug on the mothers between two groups were compared Using Chi-square test, The Chi-square value was 81.51.

(P<0.001) showing significant statistical difference, Indicating that pethidine had higher sedative effect when compared to epidural analgesia.

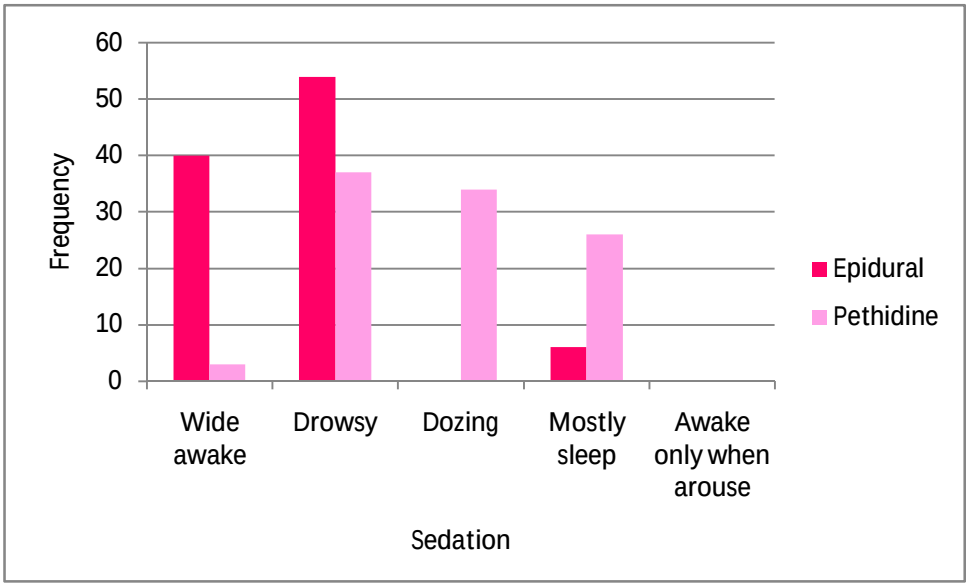


Table: 13 INTERVAL TO FULL DILATATIONS

	Median
Epidural	240
Pethidine	240

The median time interval from administration of drug to full dilatation was 240 minutes in both epidural and pethidine groups. We Used Mann-Whitney U test, for comparison, we could not found any significant difference in the time interval (P=0.729). (The mean rank of Epidural and Pethidine group was 99.12 and 101.88 respectively. The Mann –Whitney U =4862.5 and P=0.729)

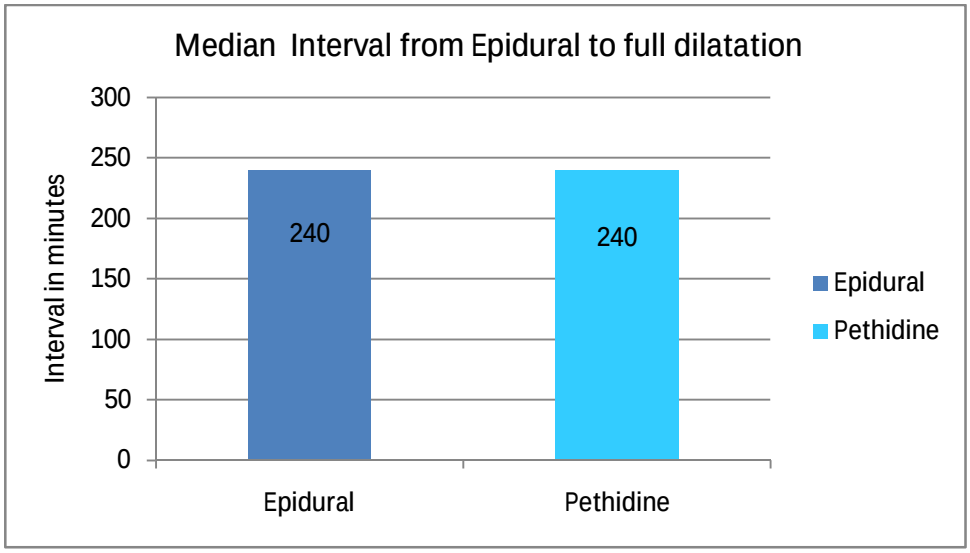
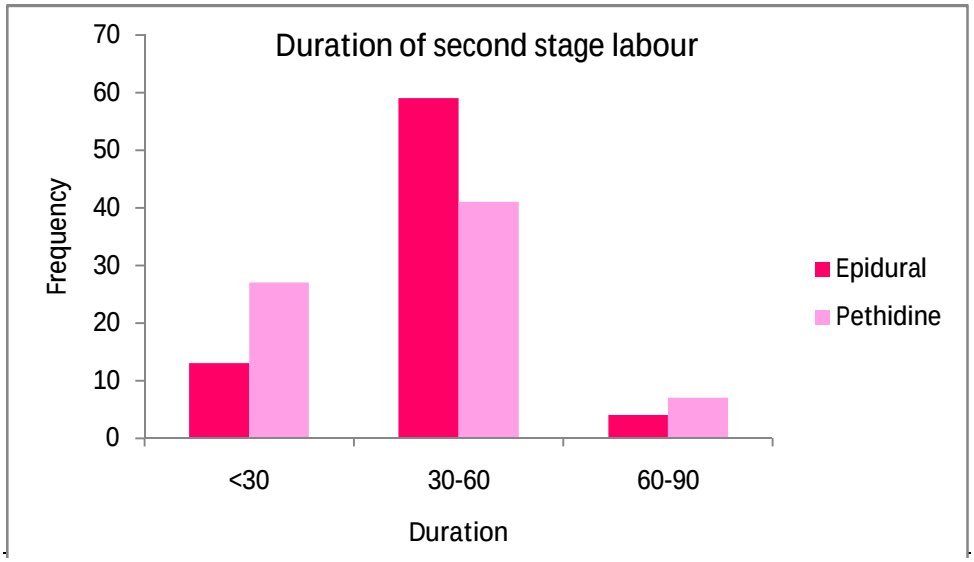


TABLE:14 DURATION OF SECOND STAGE LABOUR

Duration(minutes)	Epidural (n=76)	Pethidine(n=75)
< 30	13 (17.1%)	27 (36%)
30-60	59 (77.6%)	41 (54.6%)
60-90	4 (5.26%)	7 (9.3%)

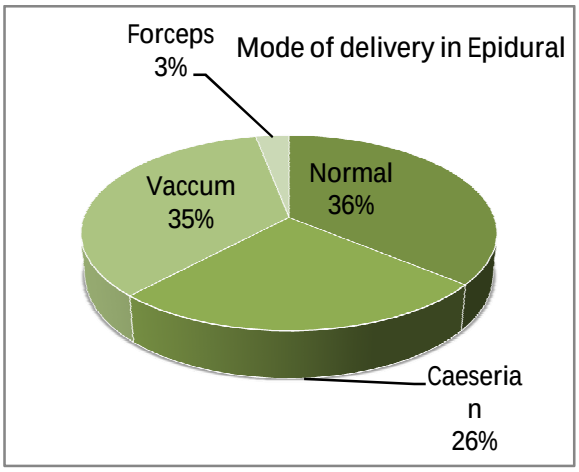


The median duration of second stage labour in Epidural and Pethidine were 30 and 20 minutes respectively. Mann- Whitney U test was used for comparing the duration of second stage labour. Results showed no significant difference (P=0.152) in the duration of second stage labour between two groups. (The mean rank of Epidural and Pethidine were 106.04 and 94.96 respectively. The Mann- Whitney U=44446.0 and P=0.152).

Table 15: MODE OF DELIVERY

	Epidural (n=100)	Pethidine (n=100)
Normal	36 (36%)	62 (62%)
Caesarean	26 (26%)	25 (12%)
Vacuum	35 (35%)	12 (12%)
Forceps	3 (3%)	1(%)

Chi-Square analysis showed no significant difference in the rate of caesarean section between two groups (P=0.8711). Statistics showed significant difference in the rate of normal vaginal delivery, indicating pethidine group had more number of normal vaginal delivery (62%) with p value (P<0.001). Rate of instrumental deliveries was more with epidural group (38%) vs. (13%) in pethidine group, with significant statistical difference (P<0.001).



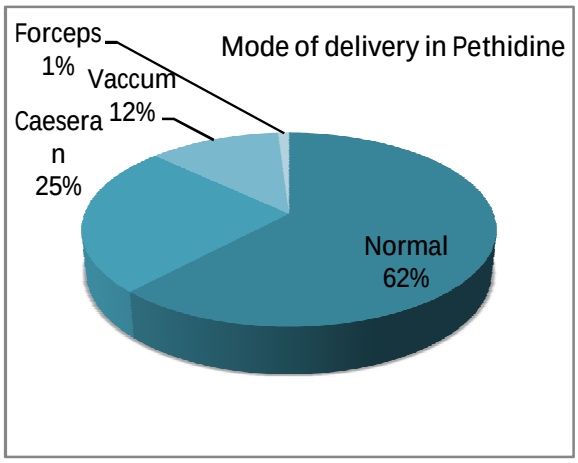
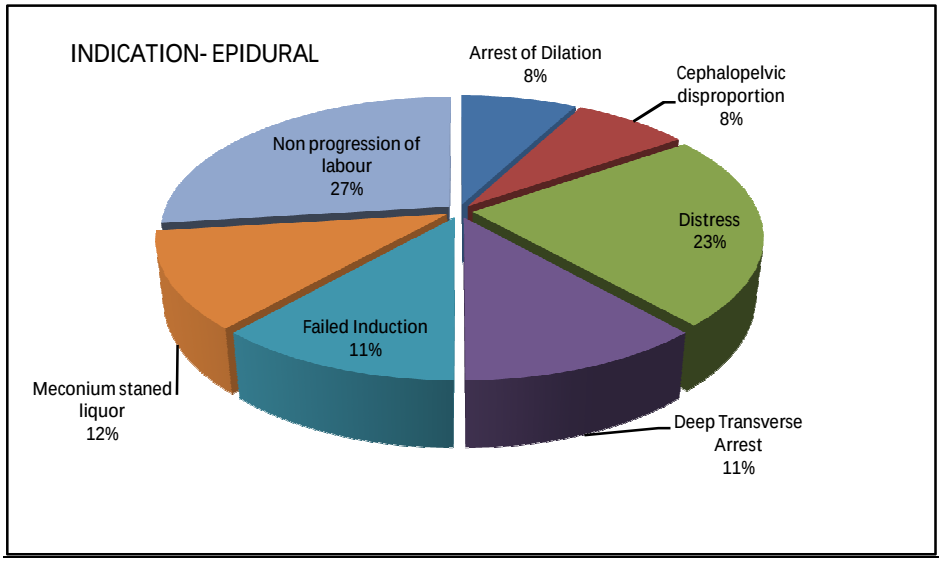


Table 16: INDICATION FOR CAESAREAN SECTION :

	Epidural(n=26)	Pethidine(n=25)
Arrest of dilatation	2 (7.69%)	2(8%)
Cephalopelvic disproportion	2 (7.69%)	6 (24%)
Distress	6 (23.07%)	11(44%)
Deep transverse arrest	3 (11.53%)	2(8%)
Failed Induction	3 (11.53%)	0 (0%)
Meconium stained liquor	3 (11.53%)	2 (8%)
Non progression of labour	7 (26.92%)	2 (2%)

Fisher's exact test was used to compare the indication for caesarean between two groups. We could not find any statistical significant difference. (P=0.153).



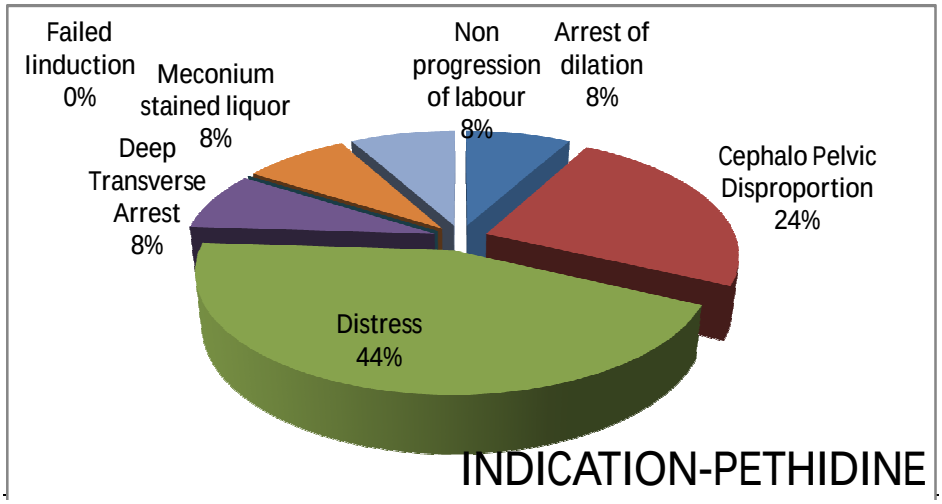
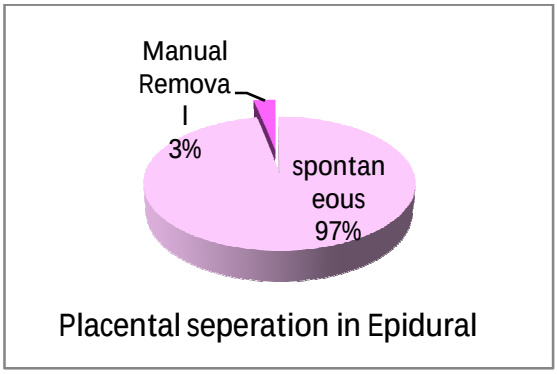


Table 17: PLACENTAL SEPARATION

Method	Group		χ^2	df	P value
	Epidural (n=100)	Pethidine (n=100)			
Spontaneous	97 (97%)	92 (92%)	2.405	1	0.121
Manual Removal	3 (3%)	8 (8%)			

Chi-Square test was done to find any differences in the placental separation between two groups. The Chi-Square value was 2.405 with 1 df, showing no statistical significant difference (P =0.121).



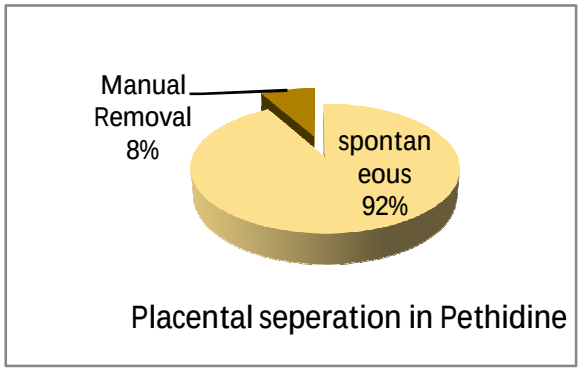
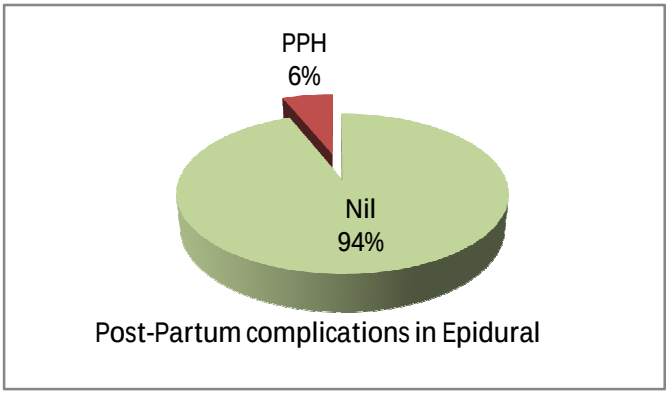


Table 18: POST-PARTUM COMPLICATION

	Epidural (n=100)	Pethidine (n=100)
Nil	94 (94%)	90 (90%)
PPH	6 (6%)	10 (10%)

Chi-Square test was done to find whether there is any significant difference in the Post-Partum complications between two groups. The Chi-Square value was 1.087 with 1 df showing no statistical significant difference (P=0.297).



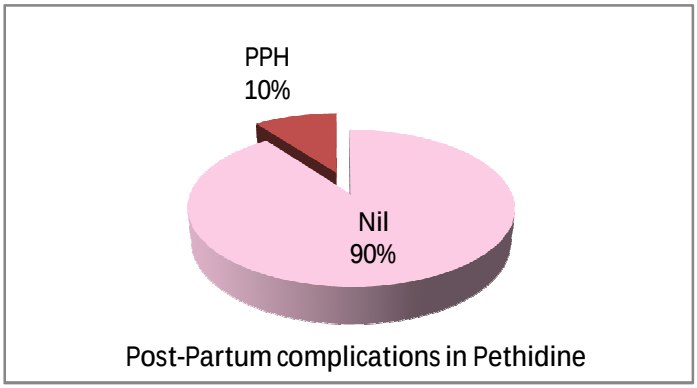
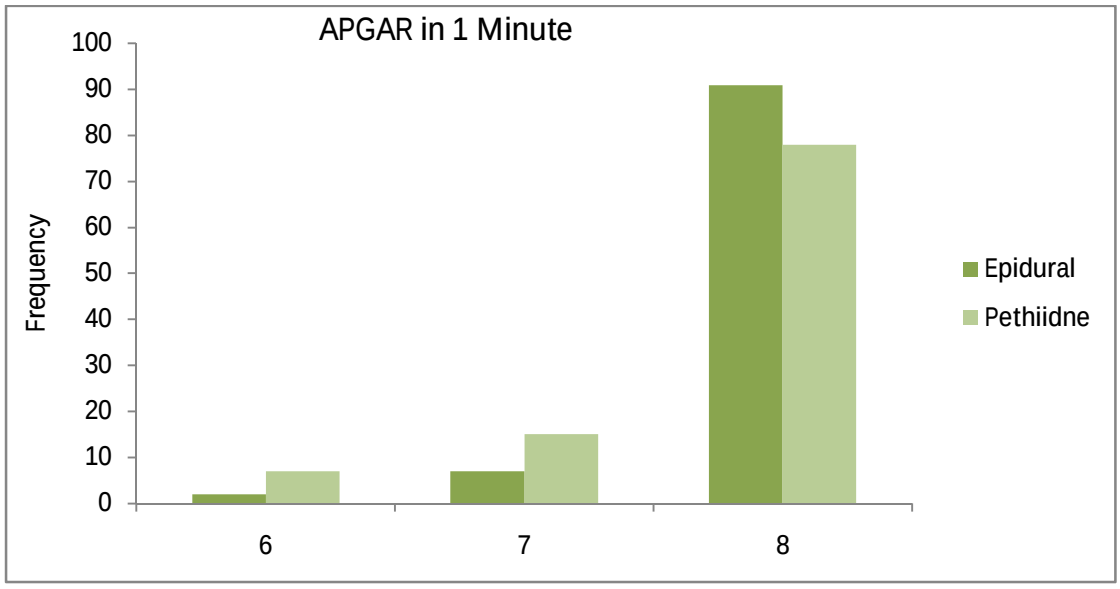


Table 19: APGAR

(i) APGAR at 1 minute

APGAR 1minute	Epidural (n=100)	Pethidine (n=100)
6	2 (2%)	7 (7%)
7	7 (7%)	15 (15%)
8	91 (91%)	78 (78%)

Analysis was done using fisher exact test ,The APGAR score at 1minute in Epidural and Pethidine group showed statistically significant difference (P=0.0335) showing better APGAR score for babies born after epidural analgesia.



(i) APGAR at 5 minutes

APGAR 5 minutes	Epidural (n=100)	Epidural (n=100)
7	3 (3%)	11 (11%)
8	6 (6%)	14 (14%)
9	91 (91%)	75 (75%)

Analysis was done using fisher exact test, The APGAR score at 5 minute also showed statistically significant different results. (P=0.008), showing favorable neonatal outcome after epidural analgesia.

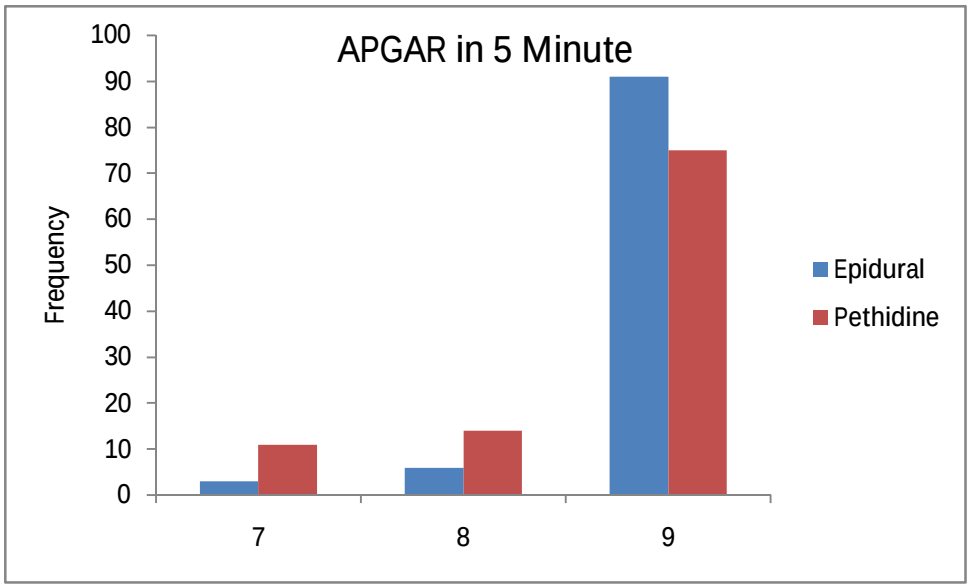


Table 20: BIRTH WEIGHT

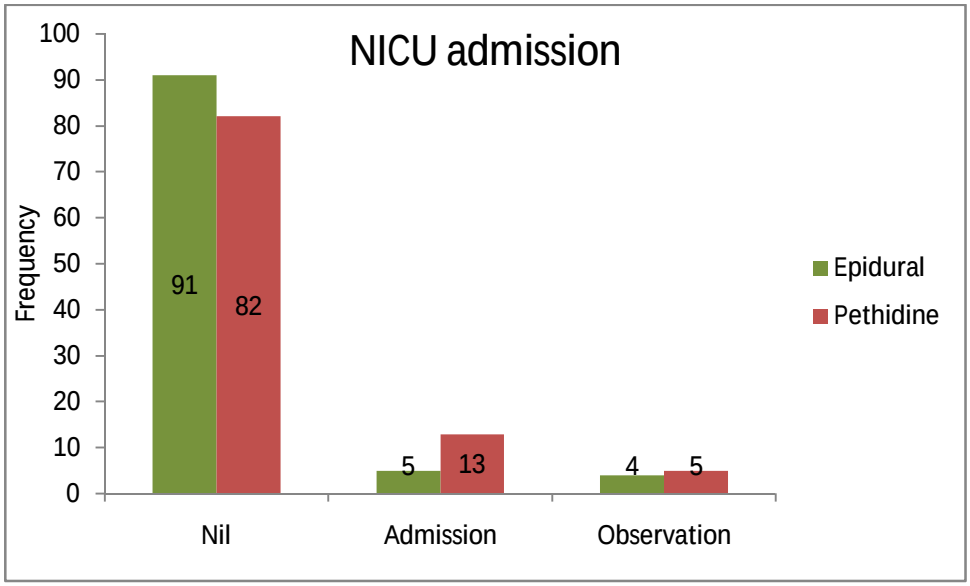
	Median
Epidural (n=100)	3.2
Pethidine (n=100)	3.2

We ran a Mann –Whitney U test to evaluate the difference in the birth weight of babies in Epidural and Pethidine group. We could not found any significant differences (P=0.647). (The mean rank in Epidural and Pethidine group was 98.64 and 102.36. The Mann-Whitney U =4813.5 and P value =0.647).

Table 21: NICU Admission

	Epidural (n=100)	Pethidine (n=100)
Nil	91(91%)	82 (82%)
Admission	5 (5%)	13(13%)
Observation	4 (4%)	5 (5%)

Using Fisher's exact test, we checked the comparison between the NICU admissions in the two groups. We could not find any significant difference (P=0.1165).



DISCUSSION

Total number of patients enrolled for the study was 200. These 200 consecutive patients were alternatively assigned to either epidural analgesia or parenteral pethidine in their active phase of labour, thus each study group had 100 patients.

In our study we compared efficacy and side effects of epidural analgesia in labour; it's maternal and fetal effects with that of intramuscular pethidine. Main outcome measured were change in vital parameters, fetal heart rate, side effects of the drug, assessment of analgesia according to visual analogue scale, duration of labour, duration of second stage of labour, mode of delivery, condition of the baby and the need for NICU admission and any other complications.

It's a proved fact that epidural analgesia provides superior pain relief when compared to other techniques (5). But there are lots of controversies regarding whether it will prolong the duration of labour, increases the chance of operative deliveries and its disturbing side effects.

PAIN RELIEF

Pain is a unique parameter which varies from person to person. It's a subjective phenomenon and it is difficult to measure. In our study we used visual analogue scale to interpret the pain.

Sheiner E et al (18) in his study on 401 patients evaluated the efficacy of analgesics (epidural versus parenteral pethidine) on labour.131 women were

enrolled for epidural analgesia and 270 women opted for parenteral pethidine. Study concluded that parturients from epidural group experienced significantly less pain during labor as compared to those who received pethidine (mean VAS scores 5.05 vs. 9.14, respectively; $p<0.001$)showing that epidural provides better analgesia when compared to pethidine .

Similar conclusion was given by Loughnan et al (62) in his study.

Our study also showed similar findings as 14% patients in epidural group had no pain ,while there was no one in pethidine group without any pain after the administration of the drug. Majority of patients in epidural group had only mild pain (68%) while majority of patients in pethidine group complained of severe pain (55%).32 % patients in pethidine group complained of worst possible pain but there was only 1 % patient in epidural group who had the worst possible pain. Statistical data showed significant statistical difference in the pain score between both the groups with ($p<0.001$).

1 patient in epidural group had worst possible pain in spite of the fact that epidural analgesia is popular for its profound analgesic effect. Literature shows that inadequate pain relief can occur in 15-20% cases in epidural analgesia ,reason being improper placement of the epidural catheter tip, migration of the catheter from epidural space,or due to block in the catheter .(63)

AGE , PARITY AND GESTATIONAL AGE

Age, parity and gestational age were not statistically different in both the groups.

CERVICAL DILATATION AT THE TIME OF EPIDURAL BLOCK/PARENTERAL PETHIDINE

From our study we concluded that cervical dilatation at the time of administration of drug was not statistically different in two groups with p value of (P>0.05).

INTERVAL FROM ADMINISTRATION OF DRUG TO FULL DILATATION OF CERVIX

Loughnan et al (62) in his study on 614 patients in labour,310 were randomly allocated for intramuscular pethidine and 304 were allocated for epidural bupivacaine. Results showed duration of active labour for epidural group was 3.3 hours and for pethidine was 3.2 hours which was not statistically different.

But in contrast Halpern et al (64) found that there was no difference in the rate of caesarean delivery between patients who received epidural analgesia or parenteral pethidine; Epidural patients had longer duration of labour in 1st stage of 42 minutes.(WMD, 42 minutes; 95% CI, 17-68 minutes).

In our study also we could not found any significant difference in the time interval (P=0.729). (The mean rank of Epidural and Pethidine group were 99.12 and 101.88 respectively. The Mann –Whitney U =4862.5 and P=0.729).

DURATION OF SECOND STAGE

Epidural analgesia is known to prolong the second stage of labour but not all studies support this. According to ACOG guidelines , prolonged second stage is when the duration of second stage is more than 3 hours with regional analgesia for primigravida and more than 2 hours in multiparous women.

Halpern et al in his study on 2369 women in labour, who were randomly assigned to epidural analgesia and parenteral pethidine found that epidural analgesia was associated with prolonged second stage by an average of 14 minutes.(64)

In contrast Bofill et al (65) found no difference in the duration of first stage of labour in his study on hundred women in active labour with epidural analgesia versus narcotics. Study showed no significant differences in the length of first stage of labour (p value 0.54) or second stage of labour (p value 0.55).

In our study we compared duration of second stage of labour between two groups. Results showed no significant difference (P=0.152) in the duration of

second stage labour .(The mean rank of Epidural and Pethidine were 106.04 and 94.96 respectively. The Mann- Whitney U=44446.0 and P=0.152).

MODE OF DELIVERY

INSTRUMENTAL VAGINAL DELIVERY

Sharma et al (66) used meta –analytic technique to evaluate epidural analgesia in labour. A total of 1,339 nulliparous women were assigned to receive epidural analgesia while 1,364 women were assigned to receive Inravenous meperdine.Women who received epidural analgesia had increased incidence of instrumental deliveries (p value <0.001)

Halpern et al(64) in their study concluded that epidural technique was associated with higher incidence of instrumental deliveries .

Liu and Sia et al(67) also concluded similar finding in their meta-analysis that there is increased chance of instrumental delivery (OR 2.11;95%CI 0.95 to 4.65) with no increase in caesarean section rates.

In our study rate of instrumental deliveries was also more with epidural group (38%) vs (13%) in pethidine group ,with significant statistical difference (p<0.001).The major indication of instrumental delivery in Epidural group was failed maternal effort ,which could be because of perineal relaxation and motor block.

CAESAEREAN DELIVERY

Sharma et al(66) in their study on 2,703 nulliparous women (1339 in epidural group ,1364 in Intravenous meperidine group) found no difference in caesarean delivery rate between both groups (p value -0.920)

Halpern et al (64) in their study concluded that epidural analgesia was not associated with increased rate of caesarean section ((OR, 1.5; 95% CI, 0.81-2.76)

Liu and Sia et al (67) in their meta analysis concluded that epidural analgesia with low concentration bupivacaine infusion is not associated with an increased risk of caesarean delivery (OR 1.03:95% CI 0.71 to 1.48)

Similar findings was also reported by Ramin et al (68) ,randomized 1330 women of mixed parity to receive either intravenous meperidine or an epidural analgesic (bupivacaine and fentanyl infusion). Rate of caesarean section for epidural group was 9 % and for pethidine group was 5 %.

In our study there was no significant difference in the rate of caeserian section between two groups (P=0.8711).

PLACENTAL SEPERATION

Rosaeg O P et al (69) concluded that there was no clinically important difference in the number of patients who had spontaneous placental separation or those who required manual removal of placenta between both the groups.
In our study also there was no statistical significant differences in the placental separation between two groups (P =0.121).

CTG ABNORMALITY FOLLOWING EPIDURAL ANALGESIA

In our study CTG abnormality was compared between pethidine group and epidural group .Statistical analysis showed no significant difference in both the groups.(p value-0.189)

Capogna et al (70) in 2001 also found transient FHR changes occasionally following labour epidurals but these changes are transient and do not cause any fetal morbidity .

Cochrane data base 2004 concluded that preloading prior to traditional high dose local anaesthetic block may have some beneficial effects.

Leighton BL et al (52) in 2002 also reported that analgesic method does not affect fetal oxygenation, neonatal pH or 5minute Apgar score.

FETAL AND NEONATAL OUT COME

Longhnan et al (62) in their study found 3 % neonates with 5 minute APGAR Score less than 9 in both epidural and pethidine group showing no difference in the neonatal outcome between two groups.

Halpern et al (64) in his study on comparison with parenteral pethidine and epidural analgesia concluded that After epidural analgesia, neonates were less likely to have low 5-minute Apgar scores (OR, 0.38; 95% CI, 0.18-0.81) or need naloxone (OR, 0.24; 95% CI, 0.07-0.77).

In our study APGAR score at 1minute and 5 minute in Epidural and Pethidine group showed statistically significant difference (P= 0.0335) and (P=0.008) respectively ,showing better APGAR for babies born after epidural analgesia.

The need for NICU admissions were also compared . We could not find any significant difference (P=0.1165).

COMPLICATIONS

The following studies shows complications with epidural labor analgesia as compared to control group:

Side Effect	Howell CJ (71) (N=184)	Con Butler (45) (N=210)	Crawford(72) (N=923)
Headache	-	-	19.4%
Bladder Dysfunction	-	-	25.8%
Shivering	-	-	-
Nausea	-	-	-
Backache	22%	85%	45%

In our study 77% of patients in epidural group had no complication . Incidence of Dural puncture, fever and motor blockade were 2%, incidence of head ache and tachycardia were 4% and 9% patients complained of urinary retention.

SUMMARY

This study was done in PSG Institute of Medical Science and Research , Coimbatore in the Department of Obstetrics and Gynaecology .

Primary aim of the study was to study the effect of epidural analgesia on labour, maternal and neonatal outcome.

Seconadary aim was to compare the efficacy and side effects of epidural analgesia and intramuscular pethidine.

Total number of patients enrolled for the study was 200. These 200 consecutive patients were alternatively assigned to epidural analgesia and parenteral pethidine in their active phase of labour .Thus each study group had 100 patients .Detailed history and examination of the patient was done and a base line CTG was taken .Once the patient gets in to active labour she was randomly allocated into either epidural analgesic group or intramuscular pethidine group.

Vital parameters, fetal heart rate and uterine contractions were monitored following administration of the drug ,every 5 minutes for 60 minutes following loading dose completion and every 30 minutes thereafter until delivery.

Labour was augmented with oxytocin and any side effects or complications during the study period was noted.

The observations noted were as follows:

- Age, parity and gestational age were not statistically different in both the groups.
- Pain score was assessed which showed significant less pain for patients in epidural group when compared to pethidine group ($p<0.001$).
- Cervical dilatation at the time of administration of drug was not statistically different ($P>0.05$).
- We could not found any significant difference ($P=0.729$) in the time interval from administration of drug to full dilatation of cervix. (The mean rank of Epidural and Pethidine were 99.12 and 101.88 respectively. The Mann –Whitney U =4862.5 and $P=0.729$)

- Duration of second stage of labour was also not significantly different ($P=0.152$) in these two groups**.**

- Rate of instrumental deliveries was found to be more with epidural group (38%) vs. (13%) in pethidine group ,with significant statistical difference ($p<0.001$). The major indication of instrumental delivery in Epidural group was failed maternal effort, which could be because of perineal relaxation and motor block.

- There was no significant difference in the rate of caesarean section between the study groups ($P=0.8711$).

- Mode of placental separation and post partum complications were not statistically different with (P =0.121) and (P=0.297) respectively.
- In our study APGAR score at 1minute and 5 minute in Epidural and Pethidine group showed statistically significant difference (P= 0.0335) and (P=0.008) respectively ,showing better APGAR for babies born after epidural analgesia. NICU admissions in the two groups also showed no significant difference (P=0.1165).

- 77% of patients in epidural group had no complication during the study period. Incidence of Dural puncture, fever and motor blockade were 2%, incidence of head ache and tachycardia were 4% and 9% patients complained of urinary retention. In pethidine group 30 % patients complained of vomiting; sedative effect of the drug was also significantly more with pethidine group.

CONCLUSION

Labour analgesia strives at making child birth a less traumatic and providing a more comfortable zone for a mother to welcome her baby .To make this remarkably possible we should adopt the best possible technique which yields excellent analgesia with minimal side effects on both mother and baby.

The inference of our study shows that analgesia provided by lumbar epidural analgesia is remarkably better than parenteral pethidine, at the same time duration of first ,second and third stage of labour, placental separation, post partum complications ,rate of caeserian delivery were all comparable between the two groups.

Parenteral pethidine is still a good option for analgesia in poor resource setting or in conditions where epidural analgesia is contraindicated.

PATIENT CONSENT FORM

I……
…… exercising my free will of choice, hereby give my consent to be included as a subject in the Clinical Trial of` "Epidural analgesia in labour and its outcome". I understand that I will be given epidural analgesia / intramuscular pethidine for my pain relief in labour..The risks of the procedure and reaction to the drug were explained by the doctor to me in detail. I was given the opportunity to clarify any concerns I have and I sign this consent voluntarily without any inducement and give my consent for the procedure.

……

Signature of the attending obstetrician Signature of the patient

PROFORMA

NAME:

AGE:

OBSTETRIC SCORE:

GESTATIONAL AGE:

PULSE:

BLOOD PRESSURE:

PER VAGINAL EXAMINATION FINDINGS:

CTG:

TIME OF ADMINISTRATION OF DRUG:

CERVICAL DILATATION AT THE TIME OF ADMINISTRATION OF THE DRUG:

PULSE:

BLOOD PRESSURE:

FETAL HEART RATE :

PAIN SCORE:

NEED FOR OXYTOCIN:

INTERVAL FROM ADMINSTRATION OF DRUG TO FULL DILATATION OF CERVIX:

DURATION OF SECOND STAGE:

MODE OF DELIVERY(INDICATION):

MODE OF PLACENTAL SEPERATION:

POST PARTUM COMPLICATIONS:

SIDE EFFECTS :

NEONATAL OUTCOME: APGAR SCORE:

BIRTH WEIGHT :

NEED FOR NICU ADMISSION:

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KEY WORDS IN MASTER CHART

GA	-	Gestational Age
Primi	-	Primigravida
Multi	-	Multigravida
B	-	Booked
UB	-	Booked outside
LD	-	Late deceleration
Variable	-	Variable deceleration
Ur.ret	-	Urinary retention
motor B	-	Motor block
dural P	-	Dural puncture
n	-	Normal vaginal delivery
cs	-	Caesarean section
v	-	Vaccum assisted vaginal delivery
F	-	Forceps assisted vaginal delivery
arrest D	-	Arrest of dilatation
FM	-	Failed Maternal efforts
Cpd	-	Cephalo pelvic disproportion
non p	-	Non progression of labour
m	-	Meconium stained liquour

distress	-	Fetal distress
failed I	-	Failed Induction
DTA	-	Deep Transverse Arrest
Prolonged	-	Prolonged labour
S	-	spontaneous separation
MRP	-	Manual Removal of Placenta
INT(min)	-	Interval from administration of drug to full dilatation in minutes
COMP	-	Complications
DEL	-	Delivery time
2^{ND} STG	-	Second stage of labour duration
MODE D	-	Mode of delivery
INDICN	-	Indication
PLS	-	Mode of placental separation
B WT	-	Birth weight

Sl.No	I P NUM	NAME	AGE	PARITY	GA	B/UB	dilatation	PULSE	BP	OB	PAIN SCORE	SEDATED	OXYTOCICS	INTERVAL	CTG	COMP	INT(MIN)	2 ND STG	MODE D	INDICN	PLS	PPC	B WT	APGAR	NICU
1	I10038654	RAJESHWARI	24	multi	40	B	>3 cm<5 cm	n	n	20 ms	2	1	+	4 hrs	nil	nil	240	30 ms	n	nil	s	nil	3.2 kg	8/10,9/10	nil
2	I10039069	BAGYALAKSHMI	28	multi	39	B	>3cm<5cm	n	n	15ms	2	2	+	3 hrs	nil	nil	180	30 ms	n	nil	s	nil	3.4 kg	8/10,9/10	nil
3	I10041106	VIJAYALAKSHM	26	primi	38+6	B	>3cm<5cm	n	n	15ms	2	4	+	4 hrs	nil	nil	240	40 ms	n	nil	s	nil	2.8 kg	8/10,9/10	nil
4	I11041184	SARADHA	25	primi	38 +6	B	>3 cm<5 cm	n	n	25ms	2	1	+	nil	nil	nil	nil	nil	cs	m	s	nil	3.6 kg	8/10,9/10	nil
5	I11024181	VENI	23	primi	40+1	B	>3cm<5cm	n	n	25ms	2	1	+	nil	nil	dural P	nil	nil	cs	arrest D	s	nil	3.7 kg	7/10,8/10	adm
6	I11042176	PRIYA	26	primi	38+6	UB	>3cm<5cm	n	n	15ms	2	1	+	4 hrs	nil	nil	240	40 ms	v	F M	s	nil	2.8 kg	8/10,9/10	nil
7	I11044491	DEEPA	30	multi	40+1	B	>3 cm<5 cm	n	n	30 ms	2	1	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3 kg	8/10,9/10	nil
8	I11044694	RAJULA	30	primi	36+5	B	>3cm<5cm	n	n	20 ms	2	1	+	5 hrs	nil	nil	300	30 ms	v	F M	s	nil	2.8 kg	8/10,9/10	nil
9	I12030867	NAVITHA	29	primi	39+6	B	>3cm<5cm	n	n	35 ms	4	1	+	nil	nil	nil	nil	nil	cs	non p	s	nil	3.2 kg	8/10,9/10	nil
10	I11046281	MUTHULAKSHMI	21	primi	39	UB	>3 cm<5 cm	n	n	40 ms	4	1	+	5 hrs	nil	nil	300	30 ms	v	F M	s	nil	3.2 kg	8/10,9/10	nil
11	I11047635	NIVEDHITA	21	primi	39	B	>3cm<5cm	n	n	25ms	4	1	+	5 hrs	nil	nil	300	30 ms	v	F M	s	nil	3.2 kg	8/10,9/10	nil
12	I11047992	SHANTHI	24	primi	39	B	>3cm<5cm	n	n	40 ms	4	1	+	nil	nil	motor B	nil	nil	cs	cpd	s	nil	3.8 kg	8/10,9/10	nil
13	I11042444	PADMAVATHY	24	primi	38+4	B	>3 cm<5 cm	n	n	35 ms	8	2	+	nil	nil	nil	nil	nil	cs	non p	s	nil	3 kg	8/10,9/10	nil
14	I11047004	SARANYA	23	primi	40+1	B	>3cm<5cm	n	n	15ms	8	2	+	4 hrs	nil	nil	240	40 ms	v	F M	s	nil	3.1 kg	8/10,9/10	nil
15	I11005094	SHOBANA	30	primi	38+1	UB	>3cm<5cm	n	n	40ms	8	2	+	3 hrs	nil	nil	180	30 ms	v	F M	s	nil	3.3 kg	8/10,9/10	nil
16	I10052062	MANJULA	23	primi	38	B	>3 cm<5 cm	n	n	20 ms	8	2	+	3 hrs	nil	nil	180	30 ms	v	F M	s	nil	3.02 kg	8/10,9/10	nil
17	I11001451	RESHMI	25	primi	40	B	>3cm<5cm	n	n	40 ms	2	4	+	nil	LD	tachycard	nil	nil	cs	distress	s	nil	2.9 kg	7/10,8/10	nil
18	I11000169	SARANYA	26	primi	40	B	>3cm<5cm	n	n	15ms	2	1	+	3 hrs 30 m	nil	nil	210	30 ms	n		s	nil	3 kg	8/10,9/10	nil
19	I11002267	GAJAPRIYA	25	primi	40	B	>3 cm<5 cm	n	n	35 ms	2	1	+	3 hrs 30 m	nil	nil	210	30 ms	n		s	nil	3.1 kg	8/10,9/10	nil
20	I11003187	MEENA	22	primi	40	B	>3cm<5cm	tachy	hyp	30 ms	2	2	+	nil	nil	FEVER	nil	nil	cs	m	s	nil	3.6 kg	8/10,9/10	nil
21	I11003801	AROKIAMARY	26	primi	39+6	UB	>3cm<5cm	n	n	20 ms	2	2	+	nil	LD	tachycard	nil	nil	cs	distress	s	nil	3.2 kg	5/10,6/10	adm
22	I11008149	LATHA	22	primi	40	B	>3 cm<5 cm	n	n	25ms	2	1	+	4 hrs	nil	nil	240	40 ms	v	F M	s	nil	2.8 kg	8/10,9/10	nil
23	I11005948	CHANDRAKALA	31	multi	40	UB	>3cm<5cm	n	n	25ms	2	2	+	nil	variab	nil	nil	nil	cs	distress	s	nil	3.3 kg	8/10,9/10	obs
24	I11008140	LATHA	31	primi	38	B	>3cm<5cm	n	n	25ms	2	1	+	4 hrs	nil	nil	240	40 ms	v	F M	s	nil	3 kg	8/10,9/10	obs
25	I11008534	AKILA	21	primi	40+2	B	3cm	n	n	25ms	0	2	+	nil	nil	nil	nil	nil	cs	m	s	nil	2.9 kg	8/10,9/10	nil
26	I11008149	LATHA	22	primi	40	B	>3cm<5cm	n	n	25ms	0	1	+	3 hrs	nil	nil	180	40 ms	v	F M	s	nil	2.8 kg	8/10,9/10	nil
27	I11011606	JAYAGANDHI	30	multi	37+6	B	>3cm<5cm	n	n	25ms	0	2	+	3 hrs	variab	nil	180	15 ms	v	distress	s	nil	3 kg	7/10,9/10	obs
28	I11012585	SENTHIL	28	primi	39	B	>3 cm<5 cm	n	n	25ms	0	1	+	4 hrs	LD	nil	240	30 ms	v	distress	s	nil	3.6 kg	7/10,8/10	adm
29	I11015994	SHARANYA	26	primi	40	B	>3cm<5cm	n	n	20 ms	2	2	+	4 hrs	nil	FEVER	240	40 ms	v	F M	s	nil	3.4 kg	8/10,9/10	nil
30	I11016178	NISHA	27	primi	40	UB	>3cm<5cm	n	n	35 ms	2	2	+	nil	nil	nil	nil	nil	cs	failed I	s	nil	3 kg	8/10,9/10	nil
31	I11014936	PRIYADHARSHINI	24	primi	40	B	>3 cm<5 cm	n	n	40 ms	2	2	+	4 hrs	nil	nil	240	30 ms	v	F M	s	nil	3.6 kg	8/10,9/10	nil
32	I11015317	KOKILA	21	primi	38	B	>3cm<5cm	n	n	35 ms	2	2	+	nil	LD	dural P	nil	nil	cs	distress	s	nil	3.43 kg	7/10,7/10	nil
33	I11016236	MAYAVINODHINI	27	primi	38	B	>3cm<5cm	n	n	15ms	2	2	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3.5 kg	8/10,9/10	nil
34	I11018218	SARANYA	20	primi	40+1	B	>3 cm<5 cm	n	n	20 ms	4	4	+	nil	nil	nil	nil	nil	cs	failed I	s	nil	3.5 kg	8/10,9/10	nil
35	I11021166	SHILPA	26	primi	40+4	UB	>3cm<5cm	n	n	40 ms	4	4	+	5 hrs	nil	tachycard	300	30 ms	v	F M	s	nil	3.2 kg	8/10,9/10	nil
36	I12028578	KANAGA	24	primi	40+2	UB	3cm	n	n	35 ms	6	1	+	3 hrs	nil	nil	180	30 ms	n		s	nil	3 kg	8/10,9/10	nil
37	I12025297	NIRANJINI	19	primi	40 +1	B	>3 cm<5 cm	n	n	20 ms	8	1	+	3 hrs	nil	nil	180	30 ms	n		s	nil	3.5 kg	8/10,9/10	nil
38	I11021726	SHARMILA	26	primi	38	B	>3cm<5cm	n	n	15ms	2	1	+	3 hrs 30 m	nil	nil	210	30 ms	v	F M	mrp	pph	3.6 kg	8/10,9/10	nil
39	I11026431	YAMUNARANI	31	multi	39+5	UB	>3cm<5cm	n	n	25ms	2	1	+	2 hrs	nil	nil	120	30 ms	v	F M	s	nil	3 kg	8/10,9/10	nil
40	I11027072	RANJINI	26	primi	39	UB	>3 cm<5 cm	n	n	20 ms	2	1	+	3 hrs 30 m	nil	nil	210	30 ms	n		s	nil	3.2 kg	8/10,9/10	nil
41	I11028360	SATHYA	27	primi	40	UB	>3cm<5cm	n	n	30 ms	2	1	+	4 hrs 30 m	nil	nil	270	30 ms	n		s	nil	3.3 kg	8/10,9/10	nil
42	I11029177	SHYNI	28	primi	40	UB	>3cm<5cm	n	n	45 ms	2	1	+	nil	nil	nil	nil	nil	cs	non p	s	nil	3 kg	8/10,9/10	nil
43	I11032099	DHARANI	22	primi	39	B	>3 cm<5 cm	n	n	15ms	2	1	+	3 hrs 30 m	nil	nil	210	30 ms	v	F M	s	nil	3.9 kg	8/10,9/10	nil
44	I11032142	SHALINI	24	primi	38	B	>3cm<5cm	n	n	20 ms	2	1	+	4 hrs 30 m	nil	nil	270	30 ms	v	F M	s	nil	2.75 kg	8/10,9/10	nil
45	I11032951	SHIVANANDHINI	26	primi	39	B	>3cm<5cm	n	n	25ms	2	1	+	4 hrs 30 m	nil	nil	270	30 ms	v	F M	s	nil	3 kg	8/10,9/10	nil
46	I11033204	SHALINI	24	primi	39+4	B	>3 cm<5 cm	n	n	20 ms	2	1	+	4 hrs 30 m	nil	ur.ret	270	30 ms	v	F M	s	nil	2.9 kg	8/10,9/10	nil
47	I10038654	RAJESHWARI	28	primi	40 +1	UB	>3cm<5cm	n	n	40 ms	0	1	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3.2 kg	8/10,9/10	nil
48	I12000893	SABEENA	25	primi	39	B	>3cm<5cm	n	n	15ms	0	1	+	4 hrs	nil	nil	240	30 ms	v	F M	s	nil	3.2 kg	8/10,9/10	nil
49	I12031831	SUGANTHA	21	primi	40	UB	>3 cm<5 cm	n	n	20 ms	0	1	+	5 hrs	nil	nil	300	15 ms	n		s	nil	3.3 kg	8/10,9/10	nil
50	I12001086	ANITHA	22	primi	40	B	>3cm<5cm	n	n	30 ms	0	1	+	4 hrs	nil	nil	240	20 ms	n		s	nil	2.9 kg	8/10,9/10	nil

51	I12027591	NITHYA	23	primi	40+1	UB	>3cm<5cm	n	n	20 ms	0	1	+	4 hrs	nil	ur.ret	240	20 ms	n		s	nil	2.76 kg	8/10,9/10	nil
52	I12027470	MAHESHWARI	23	primi	39	B	>3 cm<5 cm	n	n	15ms	0	4	+	4 hrs	nil	nil	240	30 ms	v	F M	s	nil	3.5 kg	8/10,9/10	nil
53	I12003407	KAVITHA	22	multi	40	UB	>3cm<5cm	n	n	20 ms	0	1	+	3 hrs	nil	nil	180	1 hr	F	prolonge	s	pph	4 kg	8/10,8/10	nil
54	I12003626	MANIMEGALA	25	primi	39	B	>3cm<5cm	n	n	30 ms	0	2	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3 kg	8/10,9/10	nil
55	I12001742	SIGAMANI	24	primi	40	B	>3 cm<5 cm	n	n	30 ms	0	2	+	4 hrs	nil	nil	240	20 ms	n		s	nil	3.3 kg	8/10,9/10	nil
56	I12004926	JASMIN	27	multi	39	B	>3cm<5cm	n	n	20 ms	0	2	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3.6 kg	8/10,9/10	nil
57	I12004717	JEPSI	25	primi	40	B	>3cm<5cm	n	n	25ms	4	2	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3.6 kg	8/10,9/10	nil
58	I12005567	KANAGA	24	primi	40+2	UB	>3 cm<5 cm	n	n	35 ms	4	2	+	5 hrs	nil	ur.ret	300	30 ms	n		s	nil	3 kg	8/10,9/10	nil
59	I12005445	JAYAPRIYA	22	multi	39	B	>3cm<5cm	n	n	15 ms	4	2	+	7 hrs	nil	nil	420	20 ms	n		s	nil	2.9 kg	8/10,9/10	nil
60	I12005619	GOMATHY	27	multi	37+6	B	>3cm<5cm	n	n	35 ms	4	2	+	2 hrs	nil	nil	120	30 ms	n		s	nil	3.2 kg	8/10,9/10	nil
61	I12005805	SUBHASHINI	28	multi	39	B	3cm	n	n	15ms	4	2	+	2 hrs 30 m	nil	nil	150	30 ms	n		s	nil	3.5 kg	8/10,9/10	nil
62	I12005815	KRISHNAVENI	22	primi	39+6	B	>3cm<5cm	n	n	20 ms	4	2	+	5 hrs	nil	head ache	300	30 ms	n		s	nil	2.9 kg	8/10,9/10	nil
63	I12005873	LAKSHMI PRIYA	25	multi	39	B	>3cm<5cm	n	n	20 ms	2	2	+	3 hrs 30 m	nil	nil	210	30 ms	v	F M	s	nil	3 kg	8/10,9/10	nil
64	I12006008	SUBBULAKSHMI	26	multi	38	B	>3 cm<5 cm	n	n	40 ms	4	1	+	3 hrs	nil	nil	180	30 ms	v	F M	s	nil	3.2 kg	8/10,9/10	nil
65	I12005994	THENMOZHI	22	primi	37+6	B	>3cm<5cm	n	n	40 ms	6	1	+	4 hrs	nil	nil	240	20 ms	f	F M	s	nil	3.7 kg	8/10,9/10	nil
66	I12007143	SOWMYASREE	26	primi	39	B	>3cm<5cm	n	n	20 ms	8	1	+	nil	LD	ur.ret	nil	nil	cs	distress	s	nil	3.3 kg	7/10,8/10	nil
67	I12007474	PREMALATHA	22	primi	39+2	B	>3 cm<5 cm	n	n	25ms	2	1	+	4 hrs	nil	nil	240	30 ms	v	F M	s	nil	2.5 kg	8/10,9/10	nil
68	I12008272	JAMUNA	19	primi	40	UB	>3cm<5cm	n	n	25ms	6	1	+	4 hrs 30 m	nil	nil	270	30 ms	n		s	nil	3.1 kg	8/10,9/10	nil
69	I12009072	SABEENA	22	primi	39	UB	>3cm<5cm	n	n	25ms	4	1	+	4 hrs	nil	nil	240	30 ms	v	F M	mrp	pph	4 kg	8/10,9/10	nil
70	I12010536	RATHI	22	primi	40	B	>3 cm<5 cm	n	n	25ms	8	1	+	4 hrs 30 m	nil	nil	270	30 ms	v	F M	s	nil	3.5 kg	8/10,9/10	nil
71	I12010560	RAJESHWARI	25	multi	39	B	>3cm<5cm	n	n	25ms	2	4	+	2 hrs	nil	nil	120	20 ms	n		s	nil	3.8 kg	8/10,9/10	nil
72	I12010790	SAKHI	22	primi	39+3	B	>3cm<5cm	n	n	25ms	2	2	+	nil	variab	ur.ret	nil	nil	cs	distress	s	pph	3.1 kg	8/10,8/10	nil
73	I12010913	MUBEENA	23	primi	39+2	B	>3 cm<5 cm	n	n	25ms	4	2	+	5 hrs	nil	nil	300	30 ms	n		s	nil	3.2 kg	8/10,9/10	nil
74	I12013607	HEMALATHA	26	multi	38	B	>3cm<5cm	n	n	36 ms	4	2	+	4 hrs	nil	head ache	240	1 hr	f	prolonge	s	pph	3.9 kg	8/10,9/10	nil
75	I12026982	LEEMA	28	primi	38+3	B	>3cm<5cm	n	n	15ms	4	2	+	4 hrs	nil	head ache	240	30 ms	v	F M	s	nil	2.9 kg	8/10,9/10	nil
76	I12024809	POORNIMA	26	multi	39	B	>3 cm<5 cm	n	n	35 ms	6	2	+	3 hrs	nil	nil	180	20 ms	n		s	nil	3.2kg	8/10,9/10	nil
77	I12026149	JAYA	20	primi		B	>3cm<5cm	n	n	15ms	2	2	+	4 hrs	nil	nil	240	20 ms	n		s	nil	2.9 kh	8/10,9/10	nil
78	I12014685	MAHESHWARI	25	primi	39	UB	>3cm<5cm	n	n	20 ms	6	2	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3.5 kh	8/10,9/10	nil
78	I12014911	MUTHULAKSHMI	22	primi	40	UB	>3 cm<5 cm	n	n	20 ms	2	2	+	nil	nil	ur.ret	nil	nil	cs	non p	s	nil	3.7 kg	8/10,9/10	nil
80	I12014899	VADIVUKARASI	30	multi	39+2	UB	>3cm<5cm	n	n	25ms	4	2	+	3 hrs	nil	nil	180	30 ms	n		s	nil	3.2 kg	8/10,9/10	nil
81	I12015935	MAHESHWARI	27	multi	39+6	B	>3cm<5cm	n	n	30 ms	2	2	+	nil	nil	nil	nil	nil	cs	non p	s	nil	3.3 kg	8/10,9/10	nil
82	I12015991	DIVYA	25	primi	40	B	>3cm<5cm	n	n	20 ms	2	2	+	nil	nil	nil	nil	nil	cs	non p	s	nil	4 kg	8/10,9/10	nil
83	I12018990	RATHIKA	24	primi	38	B	>3cm<5cm	n	n	15ms	2	2	+	nil	nil	nil	nil	nil	cs	arrest d	s	nil	3.8 kg	6/10,7/10	adm
84	I12019012	KAYALVIZHI	29	multi	37+6	B	>3cm<5cm	n	n	15ms	6	2	+	3 hrs	nil	nil	180	30 ms	n		s	nil	2.9 kg	8/10,9/10	nil
85	I12020380	HEMAMBIGAI	24	multi	38	B	>3 cm<5 cm	n	n	15ms	6	2	+	3 hrs	nil	nil	180	30 ms	n		s	nil	2.7 kg	8/10,9/10	nil
86	I11047004	SARANYA	22	primi	38	B	>3cm<5cm	n	n	15ms	10	2	+	5 hrs	nil	motor B	300	20 ms	n		s	nil	3.5 kg	8/10,9/10	nil
87	I12022886	ANKITHA	22	primi	38+1	B	>3cm<5cm	n	n	30 ms	4	2	+	5 hrs	nil	nil	300	20 ms	v	F M	s	nil	3.3 kg	8/10,9/10	nil
88	I12031831	REVATHY	23	primi	40	B	>3 cm<5 cm	n	n	20 ms	2	2	+	4 hrs	nil	nil	240	20 ms	n		mrp	pph	3 kg	8/10,9/10	nil
89	I12026745	KARUNYA	28	primi	37+6	B	>3cm<5cm	n	n	25ms	2	2	+	nil	nil	nil	nil	nil	cs	failed l	s	nil	2.5 kg	8/10,9/10	nil
90	I12024972	SANKARI	22	primi	40	B	>3cm<5cm	n	n	40 ms	2	2	+	nil	nil	ur.ret	nil	nil	cs	DTA	s	nil	2.9 kg	6/10,7/10	adm
91	I12026982	LEEMA	28	primi	38+3	B	>3 cm<5 cm	n	n	15ms	2	2	+	5 hrs	nil	nil	300	30 ms	v	F M	s	nil	2.9 kg	8/10,9/10	nil
92	I12026909	SUDHA	22	primi	37+3	B	>3cm<5cm	n	n	30 ms	6	2	+	5 hrs	nil	nil	300	30 ms	v	F M	s	nil	3.1 kg	8/10,9/10	nil
93	I12027921	SASIKALA	27	primi	40	B	>3cm<5cm	n	n	25ms	4	2	+	nil	nil	nil	nil	nil	cs	cpd	s	nil	3.5 kg	8/10,9/10	nil
94	I12029270	SHRUTHI	22	primi	39+6	B	>3 cm<5 cm	n	n	30 ms	4	2	+	4 hrs	nil	tachycard	240	1 hr 30 ms	cs	DTA	s	nil	3.1 kg	7/10,8/10	obs
95	I12027068	KAVITHA	30	primi	39	B	>3cm<5cm	n	n	15ms	8	2	+	4 hrs	nil	nil	240	1 hr 30 ms	cs	DTA	s	nil	3.3 kg	8/10,9/10	nil
96	I12032558	PRIYADHARSHINI	26	primi	39+6	B	>3cm<5cm	n	n	40 ms	4	2	+	5 hrs	nil	head ache	300	20 ms	v	F M	s	nil	3 kg	8/10,9/10	nil
97	I12030867	MRITHULA	26	primi	38	UB	>3 cm<5 cm	n	n	25ms	8	2	+	5 hrs	nil	ur.ret	300	30 ms	v	F M	s	nil	3.6 kg	8/10,9/10	nil
98	I12031134	KRISHNAKUMARI	25	primi		B	>3cm<5cm	n	n	40 ms	2	2	+	5 hrs	nil	nil	300	30 ms	v	F M	s	nil	3.5 kg	8/10,9/10	nil
99	I11041184	SARADHA	26	primi	37	UB	>3cm<5cm	n	n	30 ms	2	2	+	nil	nil	ur.ret	nil	nil	cs	non p	s	nil	2.9 kg	8/10,9/10	nil
100	I12031831	SUGANTHA	25	primi	38+6	B	>3 cm<5 cm	n	n	25ms	2	2	+	5 hrs	nil	nil	300	30 ms	n		s	nil	3.2 kg	8/10,9/10	nil

101	I12004583	SANGEETHA	24	primi	39 +2	B	>3cm<5cm	n	n	nil	8	4	+	5 hrs 30 m	nil	nil	330	30 ms	v	F M	s	nil	3.3 kg	8/10,9/10	nil
102	I12004190	PARVEENA	26	multi	38	B	>3cm<5cm	n	n	nil	10	4	+	nil	LD	nil	nil	nil	cs	distress	s	nil	2.9 kg	7/10,8/10	nil
103	I12004270	NANDHINI	23	primi	40	B	>3 cm<5 cm	n	n	nil	8	4	+	5 hrs	nil	nil	300	30 ms	n		s	nil	3.6 kg	8/10,9/10	nil
104	I12004638	SAJEENA	20	primi	38+6	B	>3cm<5cm	n	n	nil	10	4	+	5 hrs 30 m	nil	nil	330	30 ms	n		s	nil	2.9 kg	8/10,9/10	nil
105	I12004182	RADHA	29	multi	37	B	>3cm<5cm	n	n	nil	8	4	+	nil	nil	nil	nil	nil	cs	non p	mrp	pph	3.9 kg	6/10,7/10	nil
106	I12004950	PANKAJ	30	multi	38	UB	>3 cm<5 cm	n	n	nil	10	4	+	4 hrs	nil	vomiting	240	20 ms	n		s	nil	3.1 kg	8/10,8/10	nil
107	I12005040	JANSI	22	primi	39	B	>3cm<5cm	n	n	nil	8	2	+	nil	variab	nil	nil	nil	cs	DTA	s	nil	3.2kg	6/10,7/10	adm
108	I12005394	RAMYA	24	primi	40	B	>3cm<5cm	n	n	nil	8	1	+	5 hrs	nil	nil	300	30 ms	n		mrp	nil	2.9 kh	8/10,9/10	nil
109	I12005186	NIRANJIINI	19	primi	40 +1	B	>3 cm<5 cm	n	n	nil	8	1	+	5 hrs	nil	nil	300	30 ms	n		s	nil	3.5 kh	8/10,9/10	nil
110	I12005608	MANJULA	27	primi	40	UB	>3cm<5cm	n	n	nil	8	1	+	4 hrs	nil	nil	240	20 ms	n		s	nil	3.7 kg	8/10,9/10	nil
111	I12005567	KAVIPRIYANKA	24	primi	39	UB	>3cm<5cm	n	n	nil	8	2	+	4 hrs	nil	nil	240	20 ms	n		s	nil	3.2 kg	8/10,9/10	nil
112	I12005738	REVATHY	29	primi	39+3	UB	>3 cm<5 cm	n	n	nil	10	2	+	nil	nil	vomiting	nil	nil	cs	cpd	s	pph	4 kg	8/10,9/10	nil
113	I12005687	POORNIMA	32	multi	39+6	B	>3cm<5cm	n	n	nil	10	2	+	4 hrs	nil	nil	240	20 ms	n		s	nil	3.9 kg	8/10,9/10	nil
114	I12006012	GEETHA	28	primi	40	B	>3cm<5cm	n	n	nil	10	2	+	4 hrs	nil	nil	240	60 ms	v	prolonge	mrp	pph	3.8 kg	8/10,8/10	nil
115	I12006124	KAVITHA	25	primi	40 +2	B	>3 cm<5 cm	n	n	nil	10	2	+	4 hrs 30 m	nil	nil	270	30 ms	n		s	nil	2.9 kg	8/10,9/10	nil
116	I12006845	RUBY	32	multi	39	B	>3cm<5cm	n	n	nil	10	4	+	nil	LD	vomiting	nil	nil	cs	distress	s	nil	2.7 kg	7/10,8/10	obs
117	I12007259	AMBIKA	28	primi	38	B	>3cm<5cm	n	n	nil	10	4	+	5 hrs	nil	nil	300	20 ms	n		s	nil	3.5 kg	8/10,9/10	nil
118	I12007531	GOMATHY	19	primi	38+4	B	>3 cm<5 cm	n	n	nil	8	4	+	5 hrs	nil	nil	300	30 ms	n		s	nil	3.3 kg	8/10,9/10	nil
119	I12009062	SINDHU	20	primi	40	UB	>3cm<5cm	n	n	nil	6	4	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3 kg	8/10,9/10	nil
120	I12009228	SUDHA	22	primi	39	B	>3cm<5cm	n	n	nil	8	4	+	nil	nil	nil	nil	nil	cs	cpd	s	nil	2.9 kg	8/10,9/10	nil
121	I12009171	VIJAYALAKSHM	27	primi	38+5	B	>3 cm<5 cm	n	n	nil	8	4	+	4 hrs	nil	vomiting	240	40 ms	n		s	nil	2.8 kg	8/10,9/10	nil
122	I12011372	VANITHA	29	primi	39	B	>3cm<5cm	n	n	nil	8	4	+	5 hrs	nil	nil	300	15 ms	n		s	nil	3 kg	8/10,8/10	nil
123	I12011283	SUGANTHI	28	multi	37	UB	>3cm<5cm	n	n	nil	86	4	+	3 hrs	nil	nil	180	15 ms	n		s	nil	3.6 kg	8/10,9/10	nil
124	I12011389	ARASI	29	multi	37+6	UB	>3 cm<5 cm	n	n	nil	6	4	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3.4 kg	8/10,9/10	nil
125	I12014340	SHEEBA	23	primi	40	UB	>3cm<5cm	n	n	nil	6	4	+	4 hrs	nil	nil	240	60 ms	v	F M	s	nil	3 kg	8/10,9/10	nil
126	I12014143	CATHERIN	23	primi	40+1	B	>3cm<5cm	n	n	nil	6	4	+	nil	LD	nil	nil	nil	cs	distress	s	nil	3.6 kg	6/10,7/10	adm
127	I12014449	CHITHRA	26	primi	40	B	3cm	n	n	nil	6	4	+	4 hrs	nil	nil	240	15 ms	n		s	nil	3.43 kg	8/10,9/10	nil
128	I12014420	SUJI	27	primi	40+3	B	>3cm<5cm	n	n	nil	10	4	+	4 hrs	nil	nil	240	15 ms	n		s	nil	3.6 kg	8/10,9/10	nil
129	I12014716	MAHALAKSHMI	29	multi	39+6	B	>3cm<5cm	n	n	nil	10	4	+	4 hrs 30 m	nil	nil	270	30 ms	n		s	nil	3.5 kg	8/10,9/10	nil
130	I12017425	SWETHA	26	primi	39	B	>3 cm<5 cm	n	n	nil	8	4	+	5 hrs	nil	nil	300	60 ms	v	F M	mrp	nil	3.2 kg	8/10,9/10	nil
131	I12016312	POORNIMA	21	primi	39+4	B	>3cm<5cm	n	n	nil	8	4	+	4 hrs 30 m	nil	vomiting	270	30 ms	n		s	nil	3.5 kg	8/10,9/10	nil
132	I12017328	NELUFER	32	multi	38	B	>3cm<5cm	n	n	nil	10	4	+	3 hrs	nil	nil	180	15 ms	n		s	nil	2.9 kg	8/10,9/10	nil
133	I12020685	SATHYA	24	primi	39+2	UB	>3 cm<5 cm	n	n	nil	8	2	+	nil	nil	nil	nil	nil	cs	arrest d	s	nil	3.6 kg	7/10,7/10	adm
134	I12021183	MUTHULAKSHMI	23	primi	39	UB	>3cm<5cm	n	n	nil	8	2	+	nil	variab	nil	nil	nil	cs	distress	s	nil	3 kg	8/10,9/10	nil
135	I12023610	NABEESHA	29	multi	38	B	>3cm<5cm	n	n	nil	8	2	+	4 hrs	nil	nil	240	15 ms	n		s	nil	2.9 kg	8/10,9/10	nil
136	I12026975	DHIVYA	24	primi	39+3	B	>3 cm<5 cm	n	n	nil	10	2	+	5 hrs	nil	nil	300	30 ms	n		s	nil	3.2 kg	8/10,9/10	nil
137	I12026852	PAVITHRA	29	multi	39+6	B	>3cm<5cm	n	n	nil	4	2	+	4 hrs 30 m	nil	vomiting	270	30 ms	n		s	nil	3 kg	8/10,9/10	nil
138	I12027068	KAVITHA	32	multi	40	B	>3cm<5cm	n	n	nil	4	2	+	4 hrs	nil	vomiting	240	30 ms	n		s	nil	3.9 kg	8/10,9/10	nil
139	I12027112	RADHAMMAL	23	primi	40 +2	B	>3 cm<5 cm	n	n	nil	4	2	+	nil	ld	nil	nil	nil	cs	distress	s	pph	3.2 kg	7/10,7/10	adm
140	I12027116	REVATHY	22	primi	39	B	>3cm<5cm	n	n	nil	8	2	+	4 hrs 30 m	nil	nil	270	30 ms	n		s	nil	3.4 kg	8/10,9/10	nil
141	I12026995	NAGOMI	26	primi	38	B	>3cm<5cm	n	n	nil	8	2	+	5 hrs 30 m	nil	nil	330	30 ms	n		s	nil	2.8 kg	8/10,9/10	nil
142	I12027009	VINITHA	28	primi	38+4	B	>3 cm<5 cm	n	n	nil	8	2	+	4 hrs	nil	nil	240	20 ms	n		s	nil	3.6 kg	8/10,9/10	nil
143	I12027184	PADMAVATHY	26	primi	40	B	>3cm<5cm	n	n	nil	10	2	+	nil	nil	nil	nil	nil	cs	cpd	s	nil	3.7 kg	8/10,8/10	nil
144	I12027414	HARI PRIYA	29	primi	39	B	>3cm<5cm	n	n	nil	10	2	+	5 hrs	nil	nil	300	30 ms	v	F M	s	nil	2.8 kg	8/10,9/10	nil
145	I12027417	SASIKALA	20	primi	38+5	B	>3 cm<5 cm	n	n	nil	6	2	+	6 hrs	variab	nil	360	30 ms	n		s	nil	3 kg	7/10,8/10	obs
146	I12027367	ANITHA	22	primi	39	B	>3cm<5cm	n	n	nil	8	2	+	4 hrs	nil	nil	240	20 ms	n		s	nil	2.8 kg	8/10,9/10	nil
147	I12027530	ESTHER	27	multi	37	B	>3cm<5cm	n	n	nil	8	2	+	nil	variab	vomiting	nil	nil	cs	distress	s	nil	3.2 kg	6/10,7/10	adm
148	I12027335	SADHANA	19	primi	37+6	B	>3 cm<5 cm	n	n	nil	8	2	+	nil	nil	nil	nil	nil	cs	arrest d	s	nil	3.2 kg	8/10,9/10	nil
149	I12027451	NANDHINI	30	multi	39	B	>3cm<5cm	n	n	nil	8	2	+	4 hrs	nil	nil	240	20 ms	n		s	nil	3.2 kg	8/10,9/10	nil
150	I12027591	JAYAMANI	20	primi	40+1	B	>3cm<5cm	n	n	nil	8	2	+	4 hrs	nil	vomiting	240	60 ms	n		s	nil	3.8 kg	8/10,9/10	nil

151	I12027470	SAROJINI	26	multi	39	B	>3 cm<5 cm	n	n	nil	8	2	+	4 hrs 30 m	nil	nil	270	30 ms	n		s	nil	3 kg	8/10,8/10	nil
152	I12027772	KOWSALYA	26	primi	40+3	B	>3cm<5cm	n	n	nil	10	2	+	4 hrs	nil	vomiting	240	20 ms	n		s	nil	3.1 kg	8/10,9/10	nil
153	I12027999	KARTHIKA	22	primi	39+6	UB	>3cm<5cm	n	n	nil	6	2	+	nil	nil	vomiting	nil	nil	cs	cpd	s	nil	3.3 kg	8/10,9/10	nil
154	I12027795	PECHIAMMAL	20	primi	39	B	>3 cm<5 cm	n	n	nil	8	2	+	4 hrs	nil	nil	240	30 ms	v	distress	s	nil	3.02 kg	7/10,8/10	obs
155	I12027932	NAGARATHINAM	31	multi	39+4	B	>3cm<5cm	n	n	nil	8	2	+	3 hrs	nil	vomiting	180	30 ms	n		mrp	pph	2.9 kg	6/10,7/10	adm
156	I12028166	LAKSHMI PRIYA	22	primi	40	B	>3cm<5cm	n	n	nil	8	2	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3 kg	8/10,9/10	nil
157	I12028175	ESWARI	19	primi	39+2	B	>3 cm<5 cm	n	n	nil	8	2	+	4 hrs	LD	nil	240	40 ms	v	distress	s	nil	3 kg	7/10,8/10	adm
158	I12028172	MALARVIZHI	23	primi	39	B	>3cm<5cm	n	n	nil	8	2	+	4 hrs	nil	nil	240	15 ms	n		s	pph	3.6 kg	8/10,9/10	nil
159	I12028186	THILAGAVATHY	23	multi	39	B	>3cm<5cm	n	n	nil	10	2	+	3 hrs	nil	nil	180	15 ms	n		s	nil	3.2 kg	8/10,9/10	nil
160	I12027935	SANGEETHA	27	primi	38	B	>3 cm<5 cm	n	n	nil	8	2	+	4 hrs	nil	vomiting	240	30 ms	f	F M	s	pph	3.3 kg	8/10,9/10	nil
161	I12028347	DEEPA	27	primi	39	B	>3cm<5cm	n	n	nil	8	2	+	3 hrs	nil	nil	180	60 ms	n		s	nil	3.3 kg	8/10,9/10	nil
162	I12028411	MAHESHWARI	21	primi	40	UB	>3cm<5cm	n	n	nil	8	2	+	nil	variab	nil	nil	nil	cs	distress	s	nil	3 kg	7/10,8/10	adm
163	I12028709	ANANTHI	25	primi	40 +1	B	>3 cm<5 cm	n	n	nil	6	2	+	nil	nil	vomiting	nil	nil	cs	m	s	nil	2.9 kg	7/10,7/10	adm
164	I12028721	SATHYA	27	primi	40	B	>3cm<5cm	n	n	nil	6	4	+	nil	nil	vomiting	nil	nil	cs	m	s	nil	2.8 kg	8/10,8/10	nil
165	I12028811	VIJAYALAKSHM	21	primi	39	B	>3cm<5cm	n	n	nil	6	4	+	nil	variab	nil	nil	nil	cs	distress	s	nil	3 kg	8/10,9/10	nil
166	I12028747	KOPAMMAL	30	primi	39+3	UB	>3 cm<5 cm	n	n	nil	10	4	+	3 hrs	LD	nil	180	40 ms	v	distress	s	nil	3.6 kg	6/10,7/10	adm
167	I12028673	SANGEETHA	25	primi	39+6	UB	>3cm<5cm	n	n	nil	10	3	+	4 hrs	nil	nil	240	15 ms	n		s	nil	3.4 kg	8/10,9/10	nil
168	I12028796	USHA	24	primi	40	UB	>3cm<5cm	n	n	nil	10	3	+	3 hrs	nil	vomiting	180	15 ms	v	F M	s	nil	3 kg	8/10,9/10	nil
169	I12028825	ARULVANI	20	primi	40 +2	B	3cm	n	n	nil	8	3	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3 kg	7/10,9/10	nil
170	I12028578	NIRMALA	20	primi	39	B	>3cm<5cm	n	n	nil	8	3	+	4 hrs	nil	nil	240	60 ms	v	F M	s	nil	3.2 kg	7/10,9/10	nil
171	I12025297	RADHA	26	primi	39	B	>3cm<5cm	n	n	nil	8	3	+	4 hrs	nil	vomiting	240	30 ms	n		s	nil	3.2 kg	8/10,9/10	nil
172	I12025303	PRAVEENA	34	multi	39	B	>3 cm<5 cm	n	n	nil	8	3	+	4 hrs 30 m	nil	nil	270	30 ms	v	F M	s	nil	3.3 kg	8/10,9/10	nil
173	I12025319	PRIYA	30	primi	39+6	B	>3cm<5cm	n	n	nil	10	3	+	nil	LD	nil	nil	nil	cs	distress	s	nil	2.9 kg	7/10,7/10	adm
174	I12025042	SUBHASHINI	35	multi	37	B	>3cm<5cm	n	n	nil	8	3	+	4 hrs	nil	nil	240	30 ms	n		s	nil	3.6 kg	8/10,9/10	nil
175	I12025246	SUDHA	20	primi	37+3	B	>3 cm<5 cm	n	n	nil	8	3	+	4 hrs 30 m	nil	vomiting	270	30 ms	n		s	nil	2.9 kg	8/10,9/10	nil
176	I12025357	VALLI	21	primi	37+5	B	>3cm<5cm	n	n	nil	8	3	+	nil	nil	nil	nil	nil	cs	non p	mrp	pph	3.9 kg	8/10,9/10	nil
177	I12025374	MEKALA	23	primi	39+6	UB	>3cm<5cm	n	n	nil	8	3	+	3 hrs	nil	nil	180	20 ms	n		s	nil	3.1 kg	8/10,9/10	nil
178	I12025481	VIJAYALAKSHM	26	primi	40	B	>3 cm<5 cm	n	n	nil	8	3	+	nil	variab	vomiting	nil	nil	cs	DTA	mrp	nil	3.2kg	7/10,8/10	obs
179	I12025586	RAMYA	24	primi	40	B	>3cm<5cm	n	n	nil	10	3	+	4 hrs	nil	nil	180	30 ms	n		s	nil	2.9 kh	8/10,9/10	nil
180	I12025321	REMY	20	primi	40+1	B	>3cm<5cm	n	n	nil	10	3	+	5 hrs	nil	nil	300	30 ms	n		s	nil	3.5 kg	8/10,9/10	nil
181	I12025695	THASEENA	21	primi	40+3	UB	>3 cm<5 cm	n	n	nil	10	3	+	3 hrs	nil	vomiting	180	30 ms	n		s	nil	3.7 kg	8/10,9/10	nil
182	I12025456	DEVIKA	23	primi	39+6	UB	>3cm<5cm	n	n	nil	10	3	+	3 hrs	nil	vomiting	180	20 ms	n		s	nil	3.2 kg	8/10,9/10	nil
183	I2025604	JAYALAKHMI	26	primi	39+6	B	>3cm<5cm	n	n	nil	10	3	+	nil	nil	nil	nil	nil	cs	cpd	s	pph	4 kg	8/10,9/10	nil
184	I12025497	SABEENA	27	primi	39+2	B	>3 cm<5 cm	n	n	nil	8	3	+	4 hrs	nil	vomiting	240	30 ms	n		s	nil	2.9 kg	8/10,9/10	nil
185	I12025792	AMBIKA	21	multi	39+3	B	>3cm<5cm	n	n	nil	8	3	+	4 hrs	nil	nil	240	60 ms	v	prolonge	mrp	pph	3.8 kg	7/10,8/10	adm
186	I12025337	RANI	27	primi	39+5	B	>3cm<5cm	n	n	nil	8	3	+	4 hrs 30 m	nil	nil	270	30 ms	n		s	nil	2.9 kg	8/10,8/10	nil
187	I12025798	VISHNUPRIYA	23	primi	40+1	B	>3 cm<5 cm	n	n	nil	8	3	+	nil	LD	vomiting	nil	nil	cs	distress	s	nil	2.7 kg	6/10,7/10	adm
188	I12025662	PUNITHA	26	primi	39	B	>3cm<5cm	n	n	nil	10	3	+	4 hrs	nil	nil	240	20 ms	n		s	nil	3.5 kg	8/10,9/10	nil
189	I12025881	SHOBANA	37	multi	40	B	>3cm<5cm	n	n	nil	10	3	+	4 hrs	nil	vomiting	240	30 ms	n		s	nil	3.3 kg	8/10,9/10	nil
190	I12025911	KARTHIKA	31	multi	39+6	B	>3 cm<5 cm	n	n	nil	10	3	+	3 hrs	nil	nil	180	30 ms	n		s	nil	3 kg	8/10,9/10	nil
191	I12025967	PADMAVATHY	25	primi	39	UB	>3cm<5cm	n	n	nil	8	3	+	nil	nil	vomiting	nil	nil	cs	cpd	s	nil	3.9 kg	8/10,9/10	nil
192	I12025754	MAHESHWARI	22	primi	39+4	B	>3cm<5cm	n	n	nil	8	3	+	3 hrs	nil	nil	180	40 ms	n		s	nil	2.8 kg	8/10,9/10	nil
193	I12025754	MAHESHWARI	20	primi	40	B	>3 cm<5 cm	n	n	nil	8	3	+	4 hrs	nil	vomiting	240	15 ms	n		s	nil	3 kg	8/10,9/10	nil
194	I12076012	MUTHUPECHI	31	multi	39+2	B	>3cm<5cm	n	n	nil	8	3	+	3 hrs	nil	nil	180	15 ms	n		s	nil	3.6 kg	8/10,8/10	nil
195	I1202597	KRISHNAPRIYA	22	primi	39	UB	>3cm<5cm	n	n	nil	10	3	+	4 hrs	nil	vomiting	240	30 ms	n		s	nil	3.4 kg	8/10,9/10	nil
196	I12028609	YOGESWARI	19	primi	39	UB	3cm	n	n	nil	8	3	+	4 hrs	nil	nil	240	20 ms	n		s	nil	3.2 kg	8/10,9/10	nil
197	I12024809	DEEPA	23	primi	38	UB	3cm	n	n	nil	8	3	+	nil	variab	vomiting	nil	nil	cs	distress	s	nil	3.3 kg	7/10,8/10	obs
198	I12026149	SAINABA	23	multi	40	UB	>3cm<5cm	n	n	nil	10	3	+	3 hrs	nil	vomiting	180	15 ms	n		s	nil	3.5 kg	8/10,9/10	nil
199	I12025858	AYESHA	27	primi	40+3	UB	>3 cm<5 cm	n	n	nil	8	3	+	4 hrs	nil	vomiting	240	30 ms	n		s	nil	3.8 kg	8/10,9/10	nil
200	I12026264	SOWNDARYA	27	primi	40+1	B	>3cm<5cm	n	n	nil	10	3	+	4 hrs	nil	nil	240	20 ms	n		s	nil	3 kg	8/10,9/10	nil